Training Programme for IAS Officers

December 9-13, 2002

Infrastructure deregulation

Organised by

Tata Energy Research Institute
Darbari Seth Block, Habitat Place
Lodhi Road, New Delhi – 110 003

Supported by
Department of Personnel and Training
Govt. of India

Training Program for IAS Officers on "Infrastructure Deregulation"

December 9-13, 2002, TERI, Habitat Centre, New Delhi

9th Dec	Sessions	Resource person
0930-1000	Registration	
1000-1045	Welcome and Introduction	10:00-10:05: Welcome remarks- Mr K Ramanathan, Senior Fellow, TERI 10:05- 10:15 - Introduction with the participants 10:15-10:30: TERI presentation, Ms Preety Bhandari, TERI 10:30-10:45 - About IHC, Mr. R M S Liberhan, Director, IHC
1045-1130	Tea & Group Photograph	
1130-1300	Infrastructure deregulation – policy and financing issues	Mr. Sri Kumar Tadimalla, Policy Advisory Group, IDFC
1300-1400	Lunch	
1400-1530	Key issues affecting the infrastructure sectors	Group work
1530-1600	Tea	
1600-1730	Key issues affecting the infrastructure sectors	Presentation by each group. Moderator: Mr K Ramanathan, TERI
1730-1745	Introduction to Orissa power sector reforms- Case study	Ms. Upneet Singh, TERI
1745-1900	Reception	
10th Dec		
1000-1130	Electricity deregulation- Issues, concerns	Mr. V Raghuraman, Senior Advisor, CII
1130-1200	Tea	
1200-1330	Private regulated utility under independent regulation- Noida case study	Mr. P Neogi, CEO, NPCL
1330-1430	Lunch	
1430-1600	Telecom deregulation – its impact on sector development and consumer satisfaction	Dr. Rajat Kathuria, Professor, Economics, IMI
1600-1630	Tea	
1630	Orissa power sector reforms- Case study	Group work
11th Dec		
9:30-11:00	Distributive generation option: regulator's role	Mr. K Ramanathan, TERI
11:00- 11:30	Tea	
11:30- 12:30	Travel to Gual Pahari	Ms Priya Gujral, TERI
13:00-14:00	Lunch	
14:00 - 15:30	Coal Deregulation- issues and challenges	Mr S K Chand, TERI
15:30-16:00	Tea	
1600 onwards	Orissa power sector reforms case study	Group work

12th Dec		
0930-1100	Restructuring options in water sector	Mr V Satyanarayana, Senior Infrastructure Finance Advisor, FIRE (D)
1100-1130	Tea	
1130-1300	Oil & Gas deregulation: issues	Mr. Devi Dayal, Former Secretary, Ministry of Petroleum and Natural Gas
1300-1400	Lunch	
1400--1530	**Restructuring options in Urban transport???**	Mr Kaushik Deb, Research Associate, TERI
1530-1600	Tea	
1600-1730	Independent regulation and government: need for harmony	Mr S Sundar, Distinguished Fellow, TERI
1730	Orissa power sector reform case study	Group work
13th Dec		
1000-1100	Panel discussion: Future of independent regulation	Mr. S C Mahalik, Former Chairman, OERC Dr S K Sarkar, Senior Fellow, TERI
1100-1115	Tea	
1115 - 1215	Bridging research and policy	Dr Leena Srivastava, Director, Regulatory Studies and Governance Division, TERI
1215-1330	Presentation by various groups on Orissa power sector reforms	Group presentation ***Panel***: Mr. V S Ailawadi, Former Chairman, HERC Mr. K Ramanathan, Senior Fellow, TERI
1330	Course evaluation, Lunch and close	

List of Faculties

External Faculty

Mr P Neogi
CEO
Noida Power Company Ltd.
Commercial Complex (First Floor)
Block H, Alpha II Sector
Gautam Budh Nagar, Pin – 201306, U.P.
Tel: 4566559/60/61
E-mail: prabirneogi@noidapower.com

Mr V Satyanarayana
Senior Infrastructure Finance Advisor
INDO-US, Financial Institutions Reform and Expansion Project
E-3/4, Vasant Vihar
New Delhi - 110057
Tel: 6149836/6143551/6151081
Fax: 6141420
E-mail: satya@indo-usfired.com/satya18@hotmail.com

Dr Rajat Kathuria
Professor, Economics
International Management Institute
B-10, Qutab Institutional Area
Tara Crescrent, New Delhi - 110016
Tel: 6528276/6529237/6961437
Fax: 6867539
E-mail:
kathuria.imi@spectranet.com/imi@giasdl01.vsnl.net.in

Mr Devi Dayal
Gas Training Institute
Sector 16-A
Behind Film City
Noida
Mobile: 9810067049
Tel: 95120-4040154

Mr. V S Ailawadi
House No. 15/12
Sarva Priya Vihar
New Delhi - 110016
Tel: 6852238
E-mail: vsailawadi@yahoo.com

Mr R M S Liberhan
Director
India Habitat Centre
New Delhi - 110003

Mr V Raghuraman
Senior Advisor
Confederation of Indian Industry
Plot No. 249, Sector - 18
Udyog Vihar, Phase - IV
Gudgaon - 122015
Tel: 95124-8914060/till 67/95124-8914084 (D)
Fax: 95124-8914080
E-mail: v.raghuraman@ciionline.org

Mr O P Agarwal, IAS
Joint Secretary
Department of Personnel and Training
Government of India
3rd Floor, Block IV Old JNU Campus
New Mehrauli Road, N Delhi – 110067
Fax: 6107962
E-mail: opagar@nic.in

Mr S C Mahalik
D-308, Anandlok Society
Mayur Vihar, Phase – I
Delhi – 110091
Tel: 2757538 (R)

Mr Sri Kumar Tadimalla
Policy Advisory Group
Infrastructure Development Finance Company Ltd.
6th Floor, 'Capital Court'
Olof Palme Marg, Munirka
New Delhi - 110067
Tel: 6713356-58
Fax: 6713359
E-mail: srikumar@idfc.com

Internal

Dr S K Sarkar
Senior Fellow
Tata Energy Research Institute
Darbari Seth Block
Habitat Place, New Delhi - 110003
Tel: 24682100/24682111
Fax: 24682144/24682145

Mr K Ramanathan
Senior Fellow
Tata Energy Research Institute
Darbari Seth Block
Habitat Place, New Delhi - 110003
Tel: 24682100/24682111
Fax: 24682144/24682145

Mr S K Chand
Fellow
Tata Energy Research Institute
Darbari Seth Block
Habitat Place, New Delhi - 110003
Tel: 24682100/24682111
Fax: 24682144/24682145

Mr Kaushik Deb
Research Associate
Tata Energy Research Institute
Darbari Seth Block
Habitat Place, New Delhi - 110003
Tel: 24682100/24682111
Fax: 24682144/24682145

Infrastructure Deregulation

TERI, New Delhi

S Sundar and S K Sarkar

Framework for regulation: the Indian experience

Transition to a liberalized environment: experiences and issues in regulation 39-53

Why regulation?

According to the Latin root, the word 'regula' means a rule. The *Oxford English Dictionary* defines 'regulate' as 'to control or direct by means of rules and restrictions'. Thus, regulation of the industry is a process, prescribed by laws, which controls or directs some decisions of firms in the public interest. Ideally, in a market with perfect competition, where the consumer is truly 'the king', the market mechanism would itself ensure that the interests of the consumer and the commercial interests of the provider of goods or services are balanced. Since markets do not function ideally, regulation is required to provide a substitute for that element of perfect competition. The purpose of regulation is to prevent profiteering, ensure the provision of a universal service, prevent self-destructive price competition, and protect customers, employees, and the environment from harm or damage resulting from the inappropriate behaviour of firms.

Government regulators prior to 1996

India's experience with regulation in the sense of control is not new. Till recently, all sectors of the economy were regulated. For example, in the infrastructure sectors, the governments or their instrumentalities owned, operated, and regulated services. The central government, the Central Electricity Authority, state governments, and state electricity boards regulate the power sector under the authority of the Electricity (Supply) Act, 1948 and Indian Electricity Act, 1910; the Department of Telecommunications regulates the telecom sector under the Indian Wireless Telegraphic Act, 1933 and the Indian Telegraphic Act, 1885; the central government, state governments, Directorate General of Shipping, and dock labour boards regulate the port sector under the Ports Act, 1908, the Major Port Trusts Act, 1963, the Merchants Shipping Act, 1958, and the Dock Workers (safety, health and welfare) Act, 1986. In addition, there are other regulators created under various other acts relating to environment, safety, labour, etc.

Regulation as it existed then, and still continues to exist in several areas, is rooted in the belief that only the public sector can provide basic infrastructure services, that the entry of the private sector should strictly be regulated if it cannot be altogether prevented, and that the public sector agencies providing services should serve the interests and compulsions of the government. There was no attempt to distance the government's role as the policy maker and protector of public interest from its role as operator or provider of services. In fact, considerations of efficiency, productivity, and consumer interests were not of any importance. There was also the implied belief that accountability to the government and through the government to the Parliament or the legislature was adequate to ensure transparency and that no objectivity in regulation or disclosure to the public was necessary. This form of regulation or control inevitably resulted in

- unlimited discretionary powers to the service providers
- operational inefficiency and poor quality of service
- lack of transparency in the decision-making process and of accountability
- high barriers to entry and negligible flow of private capital
- financial mismanagement
- lack of protection of consumer interest with non-competitive prices at the consumer end and highly restricted consumer choices.

Requirements for sound regulation

In India, as in many other countries of the world, there is now a policy thrust towards the privatization and commercialization of infrastructure services, a thrust caused by several pragmatic non-ideology related factors. However, despite possibilities of competition, as the infrastructure services still retain strong monopolistic elements, governments have to continue being responsible for both providing a level playing field for the investors and protecting the consumers from exploitation. Commercialization of infrastructure and unbundling of services can also lead to considerable increase in transaction costs which need to be mitigated. These objectives now provide the rationale for regulation. An appropriate regulatory framework is essential for promoting public–private partnership in the delivery of infrastructure services.

This paper makes an attempt to identify what this appropriate framework should be and what the basic requisites of sound regulation are. It then examines to what extent these requisites have been addressed in the regulatory laws enacted so far at the national level. Finally, it raises issues that need to be addressed in the future. The basic requirements of sound regulation have been grouped under (1) scope or functions, (2) autonomy, (3) accountability, and (4) powers of the regulator.

Scope The scope of regulation has varied from country to country and within countries from sector to sector. Questions regarding whether the regulator should also be responsible for regulating the entry of the private sector, awarding concessions or issuing licences, and managing the process of privatization have not been answered conclusively. For example, the electricity regulators in Pakistan, Maine (USA), and Australia have the power to grant licences, whereas the regulator in Israel does not. Similarly, regulators in the telecom industry in the UK, The Philippines, and the US can issue licences and allocate frequency, whereas regulators in Australia and Canada cannot. However, universally, the scope of regulation has, inter alia, covered (1) regulation of tariff, (2) ensuring the quality of service, (3) improving efficiency and productivity, (4) protecting consumer interests, (5) ensuring fair competition in the sector, (6) speedy resolution of disputes between different players, and (7) preventing cartelization.

Autonomy Any move to separate the regulator from the executive, which has and will continue to be a major provider of services, has to be predicated on the regulator being independent of the executive for its survival and functioning, and having full freedom to exercise its powers. The autonomy of the regulator has to be guaranteed by law and not left to the magnanimity of the executive. The law should ensure that the regulator is in a position to perform its role independent of government approvals. This can only be achieved through a regulatory framework which provides for

- clear qualification criteria for the regulators, prescribed appointment process, and prescribed tenure
- delineation of the powers of the regulators and the government
- sufficient legal authority
- the regulators to hire the best available expertise and incur expenditure without having to obtain government approval
- autonomous funding which is not subjected to a budgetary process.

The relationship between the government and the regulator is somewhat unclear when it comes to the question of the government issuing directives to the regulator in public interest. In any democratic set-up, the government should clearly have the prerogative to issue such directives. At the same time, autonomous regulation would call for such directives to be issued after taking into account the views of the regulator and would also enjoin upon laying the directives for scrutiny of the legislature and, if challenged, by the courts of law.

Accountability

An independent regulator must be made accountable for its actions. Legislative scrutiny of the regulator's working, transparency in decision-making through open hearing and easy access to the proceedings, effective appellate bodies, external scrutiny of the regulator's conduct and the regulator's removal criteria, etc., are some measures to ensure accountability.

Powers

For the efficient discharge of its functions, a regulator should have the authority to access information and documentation, call for evidence, and compel attendance in the proceedings. A regulator without any teeth will not be able to ensure the compliance of its orders or directions. The penal provisions must be stiff or else continued violation will occur. Penal provisions should also be made uniformly applicable across service providers. A regulator should have the authority to issue directions while discharging its functions. Any violation of its directions should be adequately punishable.

India's independent regulators

Against the backdrop of what should go into the making of sound regulation, we will now look at the evolution of regulation in India, more specifically at the regulatory arrangements in the telecom, power, and port sectors. In addition, we will look at the regulatory arrangements in the insurance sector, although insurance is in the financial sector, because the IRA (Insurance Regulatory Authority) is an authority which has been put together.

Reforms and liberalization of the Indian economy started in 1991/92 with the power and telecom sectors being thrown open gradually to private investment and competition.

The telecom sector was opened up in 1991 with private investment being permitted in the manufacture of telephone equipment. Value-added services were thrown open for private investment in 1992, and in 1994, the National Telecom Policy reiterated the government's commitment to further liberalize the sector. The guidelines of 1991 allowed private sector entry in the generation of power. This was followed by several initiatives to attract and facilitate private investment in the power sector. Private sector participation by way of leasing port facilities was permitted in 1994 and investment in the creation of new facilities in the existing ports or establishment of new ports in 1996. However, regulation in the power and telecom sectors was not contemplated or provided for as a part of the initial reforms process, unlike in the UK where the electricity industry restructuring and positioning of the regulator were simultaneous. In the case of the telecom and power sectors, the regulators came much later, whereas in the case of the port sector the decision to set up a tariff regulatory authority was announced as a part of the policy statement in 1996. In the insurance sector, the regulatory authority has preceded the opening up of the sector. This sequence would seem to indicate that progressively there is a realization in the government that reform cannot be put into force without independent regulation and that a regulatory authority should be set up. In the hydrocarbons sector, where the pace of reform is rapid, the regulator is not yet in sight.

To what extent do the laws setting up these regulatory bodies incorporate the requisites of a sound regulation? Annex 1 sets out the provisions of the TRAI (Telecom Regulatory Authority of India) Act, 1997; the PLA (Port Laws [Amendment]) Act, 1997; the ERC (Electricity Regulatory Commissions) Act, 1998; and the IRA (Insurance Regulatory Authority) Bill, 1998 under the categories of scope, autonomy, accountability, and powers.

Scope The scope of regulation in the four sectors differs widely. Whereas TRAI has been specifically mandated to regulate the telecom sector as a whole and advise on the timing of entry of players, licensing conditions, technical capability, etc., the CERC (Central Electricity Regulatory Commission) is essentially set up to regulate tariff for central generating agencies and for interstate transmission of power. On the other hand, TAMP (Tariff Authority for Major Ports) is only a tariff regulatory authority on the lines of a tariff commission and is not a regulator of port activities at all. The IRA is being assigned a bigger mandate, which is comparable with that of TRAI, in the insurance sector. Also TRAI and the IRA at the bill stage have been specifically mandated to protect the interests of the consumers, monitor the quality of service, and ensure compliance of minimum service obligations, whereas in the case of the CERC, these have been left as objectives of the CAC (Central Advisory Committee), without any clear indication of the value of the advice of the CAC or how such advice would be heeded. In the case of TAMP, these issues have not been addressed at all.

Autonomy Only TRAI and the IRA have been allowed to levy fees and charges, and have their own funds. The CERC and TAMP are wholly dependent on the government for funding. The CERC also requires the approval of the government for the creation of posts. Although this requirement has not been specifically mentioned for TAMP, it is evident that government approval is necessary as the government has to approve TAMP's budget.

The PLA and the IRA at the bill stage have a provision for superseding TAMP and the IRA respectively. Although the circumstances in which these bodies can be superseded have been spelt out, the decision to supersede is left to the discretion of the government, which could be a threat to their autonomy.

Neither the three Acts nor the Bill clearly defines the relationship between the government and the relevant authority. Even in the case of TRAI, whose recommendatory functions have been mandated in the Act, the Department of Telecommunications has shown disregard for TRAI's recommendations, and challenged the provisions of law. In the case of the CERC, the recommendatory functions are vague: to aid and advise the government in the formulation of a tariff policy and itself receive advice from a CAC in major areas of policy, issues of quality, consumer interests, etc. The Act says nothing about what the CERC will do with the advice received.

Accountability In the ERC and TRAI Acts, it has been mandated that the regulators shall ensure transparency while exercising their powers and discharging their functions. Open public hearings, accessibility of proceedings, etc., are some of the processes used. In the case of TAMP and the IRA, no such specific provisions regarding transparency exist. TAMP has attempted to introduce transparency through its recent guidelines under the TBR (Transaction of Business Regulations), 1998. The government is the appellate body in the case of TAMP and the IRA.

Powers TRAI is a civil court, the CERC is not, although it is a quasi-judicial body with the powers of the civil court for certain limited purposes. The IRA and TAMP have not been given any of these powers. TRAI has been declared a civil court and given powers under Section 195 and Chapter XXVI of the CrPC 1973, whereas the powers of the CERC have been restricted under Sections 345 and 346 of Chapter XXVI of the CrPC 1973. Thus, TRAI has full powers to prosecute for contempt of lawful authority of public servants, offences against public justice, and offences relating to documents given as evidence, whereas the CERC does not have these powers and can only summarily proceed in the matter of contempt. As pointed out earlier, TAMP has no powers even to access documents, call for attendance, etc. Again as regards penal provisions for non-compliance of orders, the provisions in the TRAI Act are more rigorous than those in the ERC Act while there are no such provisions in the case of TAMP and the IRA.

Relations between regulators at the centre and in the states

In a federal polity like India, the mechanism for interaction between the central and state regulatory authorities has not been structured and thought through. While the ERC Act has provisions which are more in the nature of guidelines, for the setting up of the SERCs (state electricity regulatory commissions), the Act does not address the relationship between the central and state bodies in dealing with interstate transmission issues. The role of TAMP has been restricted to the major ports, without any thought being given to the need for regulation of tariff in the minor or private ports and implication of tariff regulation in one category of ports without any regulation in the other category.

Flexibility

The regulatory laws do not provide for any flexibility for speedy and effective response to changing circumstances. Since a regulator facilitates the process of transition from the monopolistic market to a competitive economy, its form, functions, and scope cannot be static. It is possible that as services are unbundled and competition increases, certain areas presently regulated may at some future date call for no regulation. For example, in the power sector it is possible that at some stage generation or distribution may not require tariff regulation. Secondly, as an economy matures and becomes sophisticated, the approach to regulation may have to change. The traditional practice of regulating the rate of return of the utilities is already undergoing a change with concepts like performance-based regulation or marginal cost approach being introduced. Technological advances may also alter the boundaries of regulation, a possibility that is looming large with telecommunications and broadcasting beginning to use the same pathways. Ideally, therefore, there should be some provision in the laws or mechanisms to ensure that the scope and nature of regulation is continuously under review.

Summation

What emerges from the above discussions is that while the TRAI Act is, perhaps, the best of the lot, none of the three Acts or the IRA Bill approaches an ideal or model regulatory law. What is also evident is that there has been no uniformity in thinking or in the approach to regulation in the various sectors. Each regulatory authority is the result of the wisdom and genius of the concerned ministry and not of any cohesive thinking in the government as a whole on the approach to

regulation. Interestingly, in the case of disinvestment a commission was set up to advise the government on the process whereas in the case of regulation there is no such body to advise the government in the introduction of the regulatory process in India.

Relevance of a research body

Against this background, a body such as the Regulatory Studies and Governance Division at TERI has some relevance. Continuing research on various issues affecting the regulators is clearly needed. In particular, there is a need for a body whose activities will, inter alia, include

- basic and applied research on relevant issues in regulation
- educational and training support to the regulator and regulated
- dissemination of information on regulatory decisions and their impact in India
- technical advice to consumer research forums as and when requested to enable their meaningful participation in the commission's proceeding
- advice to the government on utility restructuring strategies
- tracking international developments
- documenting experiences and dealing with cross-cutting issues
- study of the effect of the regulatory decisions against the stated objectives.

Future issues

The purpose of the Regulatory Studies and Governance Division and of this conference is to focus on the developments that have already taken place and draw a road map for the future. The following are some of the issues that need to be addressed and carried forward to the government.

- Should there be a task force or think-tank in the government to develop a rational and comprehensive approach to regulation, both in sectors where an authority has already been put in place and in sectors where regulation would soon need to follow?
- Should there be an overarching legislation across various sectors with sector-specific differences being covered under subordinate legislation?
- If so, what should feature in this legislation with regard to scope, autonomy, accountability, and powers of the regulator?
- To what extent should the regulatory authority be mandated to protect consumer interests, educate consumer groups, and address consumer grievances?

- What should be the regulator's role in a changing economic scenario? Who will initiate changes in regulation – the regulator or the government?
- How does one evolve a mechanism to avoid cartelization in a sector, and what should be the role of the regulator vis-a-vis the anti-trust bodies?
- To what extent should the regulator assess or grade the utility providers in terms of quality and consumer service, and how should one encourage this grading to influence the rating of a company or its standing in the financial market?
- Is there a need for a permanent forum for the regulatory bodies to share their experiences?
- Finally, and most importantly, how should governments be encouraged to shed their powers and leave regulation to authorities with the necessary objectivity and expertise?

Annex 1

Comparative provisions under the TRAI (Telecom Regulatory Authority of India) Act, 1997; the Port Laws (Amendment) Act, 1997; the ERC (Electricity Regulatory Commissions) Act, 1998; and the IRA (Insurance Regulatory Authority) Bill, 1998

Subject	TRAI	TAMP	CERC	IRA (proposed)
Scope				
Objectives under the Act through which the regulator was created	Regulate the telecommunication services and for matters connected therewith and incidental thereto	Not specified	Rationalize electricity tariff, transparent policies regarding subsidies, promote efficient and environmentally benign policies, and matters therewith and incidental thereto	Protect the interests of holders of insurance to regulate, promote, and ensure orderly growth of the insurance industry and for matters connected therewith and further to amend the Insurance Act, 1938; the Life Insurance Corporation Act, 1956; and the General Insurance Business (Nationalization) Act, 1972
Function	Determine rates; has recommendatory power on the issue of licences; regulate sharing of revenues between service providers; facilitate competition and efficiency; protect consumer interest; monitor quality of service; inspect equipment; settle disputes between service providers; advise government on telecommunications technology; levy fees	Frame a scale of rates at which, and a statement of conditions under which, services can be provided by the Port Trust or port property can be leased; and fix fees for pilotage, hauling, mooring, and other services rendered to vessels	Regulate tariff; promote competition, efficiency, and economy; advise government on tariff policy; adjudicate tariff; the CERC to receive advice from the CAC on major policy issues, and issues relating to quality, consumer, etc.	Regulate, promote, and ensure orderly growth of the insurance and reinsurance business; issue certificate of registration; protect interest of policy holders; training; specify the code of conduct; promote efficiency; promote and regulate professional organization; levy fees; control and regulate rates; prescribe the books of accounts; regulate reinvestment of funds; regulate maintenance of insolvency, adjudication of disputes between insurers and intermediaries, etc.
Consumer protection	Mandated to protect the interest of consumers of the telecommunications service, and has the powers to issue directions to service providers	No provision	The CAC to advise the CERC on protection of consumer interest, and the CERC will in turn advise the government on tariff policy which is fair to consumers	Mandated to protect the interest of the policy holders

Note **CERC: Central** Electricity Regulatory Commission; CAC: Central Advisory Committee; **C&AG.** Comptroller and Auditor **General; TAMP:** ***Tariff Authority for Major Ports***

Subject	TRAI	TAMP	CERC	IRA (proposed)
Quality of service	Mandated to monitor the quality of service, inspect the equipment of service providers; issue directions to service providers	To lay down the conditions under which services would be provided	The CAC to advise the CERC on the standard of performance by utilities, matters relating to quality provided by the licensee	Shall specify the code of conduct for surveyors and loss assessors
Dispute settlement	Authority to settle dispute among service providers and between service providers and group of consumers	No provision in the Act	Arbitrate matters involving generation and transmission companies	Adjudicate disputes between insurers and intermediaries, etc.
Autonomy				
Finances	To have a general fund to receive grants, fees, charges and disperse salaries/ expenses	To be funded by the government; budget to be approved	Expenses to be charged on the Consolidated Fund of India; budget to be approved by the government	To have a fund to receive grants, fees, charges, and disperse salaries/ expenses
Staffing	Can appoint staff and officers as required	Can appoint staff and officers as required but posts to be created with government approval	Can appoint the secretary and determine the number, nature and categories of other staff, but with government approval	Can appoint staff and officers as required
Salary	Staff salary to be determined by regulations	Staff salary to be determined by regulations	Staff salary to be determined with the approval of the government, by regulations	Staff salary to be determined by regulations
Selection	Selection of chairman/ members to be made by the government	Selection of chairman/ members to be made by the government	Selection of chairman/ members to be made by the government on the advice of the Selection Committee	Selection of chairman/members to be made by the government

Note **CERC: Central Electricity Regulatory Commission**; CAC: Central Advisory Committee; C&AG: Comptroller and Auditor General; **TAMP: Tariff Authority for Major Ports**

Subject	TRAI	TAMP	CERC	IRA (proposed)
	Members debarred from further employment within two years after completion of tenure	No bar on members seeking further employment after completion of tenure	Employment within two years after completion of tenure	Debarred from further employment within two years after completion of tenure
Relationship with the government	No supersession	Government can supersede	No supersession	Government can supersede
	Bound by directions from the government on questions of policy in the interest of sovereignty and integrity of India, security of state, friendly relations with foreign states, public order, decency, or morality	To be guided by directions of the government in matters of policy involving public interest, to be given in writing; may express views before such directions	To be guided by directions of the government in matters of policy involving public interest, to be given in writing	Bound by directions from the government on questions of policy; can express views before such directions
Accountability				
Transparency	Transparency provisions exist	No specific transparency provision exists, but Authority's order to be made available in the office of customs and conservator, and open for inspection by anybody without fees	Transparency provisions exist	No specific transparency provision exists
External scrutiny	Annual reports to be submitted to the Parliament for scrutiny	No provision regarding external scrutiny	Annual reports to be submitted to the Parliament for scrutiny	Annual reports to be submitted to the Parliament for scrutiny
Audit	Accounts and audit to be certified by the C&AG, and be laid before the Parliament	No such provision	Accounts and audit to be certified by the C&AG, and be laid before the Parliament	Accounts and audit to be certified by the C&AG, and be laid before the Parliament

Note CERC: Central Electricity Regulatory Commission; CAC: Central Advisory Committee; C&AG: Comptroller and Auditor General; TAMP: *Tariff Authority for Major Ports*

Subject	TRAI	TAMP	CERC	IRA (proposed)
Appellate bodies	Orders of the authority is final, appeal lies in high court	Order of the authority not final, government can vary the same	Orders of the authority is final, appeal lies in high court	Order of the authority not final, government may vary the same
Removal process	Member can be removed by the government but only on the advice of the Supreme Court	Authority for removal is government	Member can be removed by the government, but only on the advice of the Supreme Court	Authority with the government
	Grounds for removal of members well specified	Grounds for removal of members well specified, and includes refusal 'to act or becomes incapable of acting'	Grounds for removal of members well specified	Grounds for removal of members well specified, and includes refusal 'to act or becomes incapable of acting'
Powers	Full powers under section 195 CrPC, to prosecute for contempt of lawful authority of public servants, offences against public justice, and offences relating to documents given as evidence.; full powers under chapter XXVI of CrPC with regard to offences affecting the administration of justice which include powers to order costs, summary trial for giving false evidence, to deal with cases of contempt, order imprisonment or committal for refusing to answer or produce documents, etc.	No powers	Restricted to sections 345 and 346 of the CrPC which provide for summary proceedings for contempt; none of the other powers enjoyed by TRAI under chapter XXVI of CrPC	No powers

Note **CERC: Central Electricity Regulatory Commission**; CAC: Central Advisory Committee; C&AG: Comptroller and Auditor General; TAMP: Tariff Authority for Major Ports

Subject	TRAI	TAMP	CERC	IRA (proposed)
	Authority can call for information, conduct investigations	No power to call for information, conduct investigations	No power to call for information, conduct investigations	**Powers include calling for information, inspection, conduct inquiries, audit of insurers, intermediaries, etc.**
	Judicial proceeding	Proceeding not judicial	Judicial proceeding	**Proceeding not judicial**
	Enforceability of orders as a decree of a civil court; no civil court to have jurisdiction in matters within the purview of TRAI	No such provision regarding the enforceability of its orders	Enforceability of orders as a decree of a civil court; no bar over civil courts	**No such provision regarding the enforceability of its orders**
Penal provisions for contravention of order	**For wilful failure to comply with** the order, fine up to Rs 100 000, and up to Rs 200 000 for the second and subsequent offence, and additional Rs 200 000 per day for continuous failure	Cannot impose penalty for non-compliance of orders	For non-compliance with the order, imprisonment up to three months or fine up to Rs 100 000, or both, with an additional fine of Rs 4000 per day for continuous failure after conviction of such offence	Cannot impose penalty for non-compliance of orders
Penal provisions for contravention of directions	Fine up to Rs 100 000, up to Rs 200 000 for the second and subsequent offence, and additional Rs 200 000 per day for continuous failure	Cannot impose penalty for non-compliance of directions	Fine up to Rs 100 000, with an additional fine of Rs 6000 per day for continuous failure after contravention of first such contravention	Cannot impose penalty for non-compliance of directions
Offences by government departments	**Strict provisions to deal with such offence**	No provisions to deal with such offence	No provisions to deal with such offence	No provisions to deal with such offence

sion: CAC: Central Advisory Committee; C&AG: Comptroller and Auditor General; TAMP: *Tariff Authority for Major Ports*

Subject	**TRAI**	**TAMP**	**CERC**	**IRA (proposed)**
Power to make regulations	On all functions, especially procedure on the transaction of business, salary, and levy of fees	On the procedure regarding the transaction of business and salary	On all functions, especially duty, etc., of the secretary, procedure on the transaction of business, salary of staff, etc., terms and conditions of consultants, manner for energy charges	On all functions, especially procedure on the transaction of business, salary, levy of fees

Note **CERC: Central Electricity Regulatory Commission**; CAC: Central Advisory Committee; C&AG Comptroller and Auditor General; TAMP: Tariff Authority for Major Ports

Reconfirming regulator's legitimacy

By

S K Sarkar[1]

Of all the court decisions on infrastructure regulation, perhaps the one most significant in setting at rest the jurisdictional controversy between regulators and the judiciary, is the Supreme Court judgement of October 3, 2002 which has laid down important principles for regulatory governance. The instant case arose due to an appeal preferred by the West Bengal electricity regulator against the Calcutta High Court's May order on CESC's tariff.

Unlike the 1948 Electricity Supply Act, the ERC 1998 Act recognizes the need to protect the consumer's interest. In contrast, the Calcutta High Court noted that the consumer has no legal right to be heard in proceedings during tariff fixation, as permitting a large number of consumers would amount to "indiscriminate representation", and secondly, a rate payer is not normally, heard before such rate is fixed on the basis of "public policy" by the government in its own wisdom. Holding that price fixation is in the nature of legislative action, and that no rule of natural justice is applicable, the Apex Court observed that such principle cannot be applied where the statute (e.g. ERC Act 1998) itself has given the right of representation to the consumer. However, the manner of exercising such right can be regulated by the regulator.

In the instant case, the High Court while exercising its "appeal power" rejected regulations framed by the regulator, although the regulations were framed under " the authority of subordinate legislation" conferred on regulator by the Act. Thus, as held by the Apex Court, the High Court while exercising its appellate power, cannot go into the validity of regulations which are part of the statute itself. On the other hand, it has 'review powers' under Articles 226 and 227 of the Constitution of India, but, in the instant case, no writ petition against the vires of the regulations had been filed.

---

[1] The author is a Senior Fellow with TERI, New Delhi. The views are personal. Published in the Economic Times, November 6, 2002.

The Calcutta High Court observed that CESC is mandated to determine the tariff under 1948 Electricity Supply Act, which should be subsequently scrutinized and approved by the regulator. The Apex Court however held that the 1948 Act is only a general law as regards tariff determination, while sections 22 and 29 relating to power and functions of regulator and tariff setting norms respectively under the 1998 Act are special laws, thus prevailing over the general law, thereby confirming the regulator's authority in the matter of electricity tariff fixation. The High Court further argued that while determining the tariff under the 1998 Act, the principles enshrined in Schedule VI to the 1948 Electricity Supply Act should be only applied, and no other requirements, such as reduction of cross subsidy, efficiency and economy etc, as enshrined under the 1998 ERC Act would apply. The Apex Court held it otherwise, and observed that if the regulator commits an error contrary to rule of law or contrary to established facts in applying these principles under the 1948 Act, the issues can then be challenged in appeal.

Can an appeal against the regulatory decision be preferred on facts? The extant regulatory legislation is silent on this. While agreeing that the High Court has unrestricted power under appeal, the Apex Court held that the High Court should not interfere with the 'considered order' of the regulator, and can only do so if the it finds that the order is based on misleading evidence or is perverse. The Supreme Court observed that the High Court being not an expert body, should also be careful while interfering with the expert body's findings on facts.

While going into details on tariff determination in the CESC case, the Apex Court observed that the regulator should take into account the "collateral findings" during such process. The cost, as determined by an expert body, say, CEA (Central Electricity Authority), need not be the same as arrived at by the regulator. The latter is mandated to examine costs on grounds of efficiency and protecting consumer interests.

In sum, the lessons are many. First, the regulator must appear before the appeal court to present its views. Second, the regulatory decisions should be reasoned, and based on facts, else, they could not be substantiated on appeal. Regulators should also observe the rules of natural justice, due process of law, both in the procedural as also substantive sense. Third, while an expert appellate forum is the need of the hour, should it also examine the case on facts? This is unclear from the current judgement. One view is that the regulator should be the last fact-finding authority and that from the appellate court onwards, only points of law can be dealt with. Finally, and most important, the Supreme Court appears to hold the view, known as the principle of "Chevron Deference" in US, whereby due weightage is given by courts to the expertise of regulators.

Undermining independent regulation

By

S Sundar and S K Sarkar[1]

The government's ambivalence towards independent regulation has been yet again brought out by the Electricity Bill 2001, which is currently before the Select Committee in the Lok Sabha. While the Bill provides a framework for independent regulation, it seeks to introduce concepts that could undermine independent regulation.

Section 121 places the regulatory commission under the general power of superintendence and control of the Chairperson of the Appellate Tribunal. Regulators, should be accountable. But accountability has to ensured by requirements of transparency and provisions for appeals against regulatory decisions, and not by bringing the Commissions under the supervision of an individual, not even if that individual was the head of the Appellate Tribunal. Given the lack of guidelines in regard to the manner in which such supervision would be exercised, this section would result in an erosion of regulatory autonomy.

The Bill further dilutes regulatory autonomy by reducing the normal tenure of 5 years for the regulators, which is the standard in India and elsewhere, to three years, and making them eligible for reappointment. Presumably, such reappointment would be possible only with the approval of the Selection Committee. But, unfortunately, the Selection Committee is heavily loaded with government servants or appointees and does not inspire confidence. A short tenure, promise of re-appointment and a captive Selection Committee are a perfect recipe for influencing the regulator.

---

[1] The authors are with the TERI, New Delhi. The views are personal. Published in the Economic Times, July 31, 2002 (page 6). New Delhi.

Besides, the short tenure of three years together with the provisions that prohibit members from accepting government or commercial employment for two years after demitting office would severely discourage industry professionals from becoming regulators. Instead of seeking to attract the best talent from the open market, the Bill unfortunately does exactly the opposite.

The regulator's role in promoting competition is very limited under the existing regulatory legislation in India. The promotion of competition is only an advisory function of the regulator both under the TRAI Act, 2001 and the ERC Act 1998. And neither Act spells out the regulator's role in maintaining competition, although the regulator has some opportunity to do so through provisions relating to inter connectivity etc. Now, for the first time, however Section 60 of the bill specifically empowers the regulator to maintain competition by issuing directions to a licencee who tends to abuse his dominant position or enters into arrangements which are anti-competitive. These powers are very similar to the powers that the Competition Commission of India would enjoy under the proposed Competition Bill.

There could be turf wars between the Electricity Regulators and CCI as both would have concurrent powers to maintain competition. In the UK where a similar situation exists the question of jurisdiction is decided on the basis of who is 'best' or 'better' placed to deal with the issue. A similar arrangement needs to be worked out in India to avoid jurisdictional conflicts.

In terms of Section 95 of the Bill, all the proceedings before a Commission are to be deemed to be judicial proceedings. This would require the Commission to employ the quasi-judicial approach although regulators the world over employ different processes to arrive at regulatory decisions. Even in dispute resolution, they use processes such as negotiation and mediation. TRAI employs the process of consultation to arrive at regulatory decisions: experience has shown that it leads to a more comprehensive discussion of the issues involved, and more importantly help gain the consent of the stakeholders. That is why the Bill should have left it to the Commission to employ a process that is best suited to deal with the issue on hand. (The consultative process could be adopted for tariff setting or laying down quality standards and the quasi-judicial process for imposing penalties.)

One issue that has been confounding the advocates of independent regulation is the relationship between the regulator and the Minister and Parliament. The Minister is accountable to the Parliament or the legislature for all that happens in the electricity sector, the regulator is neither accountable to the Minister nor to the Parliament.

We have now had some seven years of regulatory experience. There have been four regulatory legislation at the Centre and some in the states. Thus, those who drafted the Bill had the opportunity to learn from history, avoid the mistakes made earlier and adopt the good practices contained in earlier legislation. That opportunity has been lost and some of the provisions in the Bill are retrograde. One can only hope that between a Minister committed to reform and a sagacious Select Committee, the situation can be retrieved.

Autonomy and accountability

By Mr S Sundar and Mr S K Sarkar[1]

The case for setting up autonomous regulators in infrastructure sectors has been well argued. A point has been made that even though the regulator will be subjected to the public policy, and the laws of the land, it has to be independent of Government in its functioning as Government itself is a stakeholder, and has to be regulated. And, when a regulator is made autonomous, it is also axiomatic that he should be made accountable to various stakeholders. This article examines provisions in the regulatory legislation relating to autonomy and accountability.

The procedure for selection of the regulator is crucial to ensure autonomy. The approach over the world, however, is not uniform. Selection of the energy regulator in the USA and in Argentina is made by the executive and the legislature jointly, and only by the executive in Canada and UK. In India, the approach is not uniform between sectors. A committee selects the members of the electricity regulator, and the executive appoints them. The telecom and insurance regulators are chosen and appointed by the executive. Ideally the regulators should be selected on the basis of an open and transparent process so that the best expertise is obtained, and the regulators are not beholden to Government for their jobs.

---

[1] **Mr S Sundar is a former Secretary to the Government of India, and currently a Distinguished Fellow in the Tata Energy Research Institute (TERI). Mr S K Sarkar, Ph D is a Fellow in the TERI. The views in the article are personal. The article was published in The Economic Times April 27, 1999 (p 6). New Delhi**

The regulatory process has to be transparent, and the regulator should be in a position to enforce its orders. This calls for according the regulator a quasi-judicial status. If the regulator is to be autonomous, its appellate body should also be autonomous Again, practices vary. In UK, an anti trusts expert body is the appellate authority, and in the energy sector in Canada, it is the Federal appeal court. If the regulator is a quasi-judicial body, it is logical that an appropriate court should be the appellate authority. This has been provided for in India in the telecom and power sectors, but, not in the insurance and ports sectors.

A regulator should be able to hire staff and expertise of its choice, and meet its expense out of independent or earmarked funds. In Argentina, the electricity regulator meets its expenses out of levies and fees imposed on the regulated entities. In contrast, the electricity regulator in Israel has an earmarked fund in the Government's annual budget, and has full autonomy in spending the funds. In India too, in the telecom sector, a " Regulatory Fund" exists, but only in theory. Once a regulator's budget is determined, and the funds are earmarked, the regulator should alone be responsible for its operation.

Again, the roles of the regulator and the Government should be well demarcated. While Governments may retain the power to issue policy directions in the public interest, what is policy must be clearly defined, and should only be restricted to "non technical and non administrative matters". In case of any dispute as to what is policy, a decision by a third party will definitely ensure fairness: This is the arrangement provided for in the electricity regulations in Orissa, and Andhra Pradesh, but not in the central legislation.

1998 (Section 38). The Electricity Reforms Acts enacted so far in the various States namely Orissa, Haryana, and Andhra Pradesh, also contain provisions to this effect.

UK experience

This approach is not unique to India. For example, in UK, the Secretary of State in the electricity industry has even the powers to issue directions as to the fuel stock at generating stations, and the construction, operation, and financial organization of generating stations. The Secretary of State in the industry can, also, intervene in a number of ways with regulation. In the telecom sector, the Secretary of State can give directions to the regulator on matters that should be taken into account in considering aspects of telecommunication industry which are subject to review, and he is not required even to make public such directions. Similar powers, also, exist in the gas and electricity sectors, though, here, the directions are required to be made public. Apart from the powers given to the Secretaries of State in different sectors, what is interesting is that in UK, there is an arrangement for informal discussion on issues, and agreement between the regulators and government (McEldowney 1998).

Public policy and policy directions

Public policy has not been clearly defined. At best, public policy is valued to meet the public good and the public interests, which are again terms which are imprecise, and capable of varying interpretation. As the Supreme Court had observed in DTC vs DTC

Mazdoor Congress case ((1991) Supp (1) SCC 600), what is public good or in the public interest, or what would be injurious or harmful to the public good or the public interests vary from time to time with the change of circumstances. The courts have also been extremely reluctant to define public policy narrowly, and have generally taken the view that it is for the government or the administration to decide on what is a public policy (Union of India vs Tejram (1991) 3 SCC 11, State of Mysore vs Srinivasmurthy AIR 1976 SC 1104). It is, therefore, not unreasonable that governments should have retained the right to determine policy, and issue such directives as are necessary to the regulators to convey the policy.

There are, however, limitations, both in law and in equity, on the extent to which governments can alter public policy, or issue policy directives to the regulators. First and foremost, policy directives to a regulator should conform to the objectives of the relevant regulatory legislation. Governments must also take extreme care to ensure that these directives do not relate to what are clearly "administrative and technical matters" and are strictly "policy in nature". In fact, this is something that has been clearly laid down in the Insurance Regulatory Authority Bill 1998, although its enforcement will depend on the wisdom of governments. Governments must also ensure that any change in public policy would have to stand the test of "Legitimate Expectation" (Punjab Communications Ltd vs Union of India (1999) 3 SCALE 149) both in a procedural and substantive sense, and the concept of "Promissory Estoppel (Sales Tax officer vs Shree Durga Oil Mills (1998) 1 SCC 572). There are other restrictions as well: policy changes for example should not violate the principles of natural justice or affect the fundamental rights of the citizens. Thus, while the regulator is bound by the public policy of the government, the formulation of public policy has to be within the confines of the limitations set out above.

Policy Direction process

Equity, also, demands that while governments can issue policy directives, they must invariably consult the regulators before such directives are issued. In fact, this has been made legally binding in the telecom and ports regulatory legislations, although consultation has been required only " as far as practicable". In the CERC legislation, no provision at all has been made for consultation. Eventually, as the process of regulation matures in India, as it has in the UK, there would be a close consultation between the governments and regulators, and there should be no need at all to issue of directives. But even as long as the need for the issue of policy directives remains, it is essential that the regulator should be invariably consulted, not only " as far as practicable", and his views respected. And, it is equally important that directives issued, and the reasons therefor should be made public.

Referral to third parties

Since the definition of a public policy is imprecise, and what constitutes public policy can be contested, some of the State Electricity Reforms Acts have provided for a mechanism to refer the question as to whether a directive is a policy directive or not to a third party. The Orissa Electricity Reforms Act 1995 provides for a reference to the Central

Electricity Authority, and the AP Reforms Act to a retired Supreme Court Judge. In our view, it is inadvisable to leave it to a non-judicial entity like the CEA to decide whether a matter is a policy matter or not, when there has been extensive judicial consideration of this issue in the past, and the highest Court in the land has been reluctant to question government's right to decide on policy and define policy with any precision. Decision as to whether a matter is a policy matter or not, is essentially judicial, and not a technical decision, and should, therefore, be left to a sitting judiciary. Besides, such a reference to a third party takes away the legitimate power and role of the High Courts and the Supreme Court, as envisaged in our legal system. It also takes away the Court's jurisdiction to strike down a policy directive if it was violative of law. In sum, the provision, if resorted, to can only lead to protracted litigation and delays.

India's experience with "policy direction"

A Policy direction to a regulator by a government was issued for the first time in India in the telecom sector. It was in the context of the implementation of the TRAI's tariff order in March 1999. After due consultations with various stake holders in the telecom sector including service providers, consumers, potential investors, Ministry of Telecommunications, and Member of Parliament, the TRAI issued a tariff order 99/3 in March 9, 1999. That order was to be become effective from April 1, 1999. On March 10, 1999, the then Minister of Communication assured the Parliament that the Government would issue a policy direction for keeping the new tariff policy in abeyance. On March

12, 1999, the Government issued a direction under Section 25 of the TRAI Act 1997 for keeping the Tariff order in abeyance, as the order did not protect the low-income users. TRAI then requested the Government to clarify the basis for the direction issued under Section 25. No clarifications were issued by the Government, and instead, it agreed on March 27, 1999 to implement the Tariff order, leaving it to MTNL and DOT to set the rental and call charges below the ceiling set by the TRAI. And TRAI in turn agreed to delay the implementation of its tariff order by a month. There is a lesson to be learnt from this episode. Governments must realize that they cannot act arbitrarily in future and should abide by the law which in this case required the government to both consult with the regulator before issuing a directive and to issue the directive before the tariff order was promulgated. In some ways, it was unfortunate that the matter was resolved between the parties on ad-hoc basis without addressing the basic issue of the relationship between the two. Perhaps, a reference of the dispute to the judiciary would have resulted in guidelines to govern the relationship between the government and regulator for the future.

Conclusion

In the ultimate analysis, the test of success of regulation would depend on how infrequently the provision on " policy direction" has been used. In Sri Lanka, for instance, the telecom regulator is not independent, and all its recommendations go to the government for implementation. Yet, it has been able to generate confidence among the investors and consumers, and establish credibility largely through its competence and government's respect for the institution. The consultative mechanisms and mutual agreements which are transparent, must eventually take the place of " policy directions", as it has in the developed countries like UK. There will be little scope for confrontation between a government that respects independent regulator, and a regulator who is transparent and credible.

References

1. The Telecom Regulatory Authority of India Act 1997
2. The Port Laws (Amendment) Act 1997
3. The Electricity Regulatory Commissions Act 1998
4. The Orissa Electricity Reforms Act 1995
5. MacEdowney John. F. *Public Law*. P 453. 1998. Sweet and Maxwell Limited. 100 Avenue Road. London. UK.

Scope and ambit of Policy Directives of the Government[1]

By

Mr S Sundar and Mr S K Sarkar
Tata Energy Reaserach Institute

Introduction

Till recently, governance in India's infrastructure sectors was based on the belief that only the public sector could provide the services best, that the entry of the private sectors should be restricted, if not altogether prevented, that the public sector agencies serve best governments' interests and compulsions, and that the Westminster style of accountability of the public sector through the Minister to the Parliament/legislature is adequate to ensure efficiency and protection of consumer interests. Governments' roles as service providers and policy makers were not separate. Further, considerations of efficiency, productivity and consumer interests were not given sufficient importance in governance.

Across the world in the last decade or so, there has been a paradigm shift towards privatization and commercialization of infrastructure services due to certain pragmatic and non-ideological factors. But, even, with the entry of private sector in the provision of infrastructure services and despite possibilities of competition, the market structure in infrastructure services retains a monopolistic element in India as in other countries. Governments, therefore, have to continue to protect consumer interests, and at the same time, have to provide a level playing field for the new investors. Further, the privatization process can lead to high transaction costs. These have to be mitigated. It also became necessary to develop a framework for private and public partnership enabling efficient delivery of infrastructure services. With governments continuing to be one of the stakeholders, they themselves have to be regulated, and therefore, the regulator has to be independent of governments, maintaining an arms length relationship with all service providers and stake holders, including governments. These considerations provide the rationale for a new type of regulation and governance in India as elsewhere. The rationales for regulations are in fact mixed. They are derived from economic principle concerned with the most efficient allocation of costs, from (the usually ill- defined) concepts of public interests, and from the idea that certain rights ought to prevail over market outcomes or externalities.

---

[1] **Presented at the National Conference on " Issues before the Electricity Regulators" during July 30-31, 1999, organised by the Orissa Electricity Regulatory Commission (OERC) at Bhubaneswar, India**

Independent regulation in India is a fairly recent concept, and government's approach to regulation has naturally been cautious. It is based on the notion that a regulator while being autonomous, should be accountable for its actions, and should also be subject to the policy of the government. Since the government has been elected by the people, and is responsible to Parliament/legislature, it is the best judge of public interest, and is best equipped to lay down "public policy". Governments, therefore, should retain the power to issue policy direction as appropriate to the regulators. Legislative provisions have been incorporated accordingly in all the central regulatory legislations namely, the Telecom Regulatory Authority of India (TRAI) Act 1997 (Section 25), the Ports Laws (Amendment) Act 1997 (Section 25), and the Electricity Regulatory Commissions Act

Proper checks and balances should be established to ensure the regulator's accountability. In case of proven misconduct, the members should be removed following a criteria. If the regulator is a quasi-judicial body, then the member's removal process must be in consultation with an appropriate court of law. The regulator's activities should be annually reported to the legislature, and its accounts should be subjected to scrutiny by an external watchdog like the C&AG.

If the regulator is not truly autonomous and accountable, it will be merely another layer or wing of Government, and there will be no change in the system of governance that has failed. Eventually, the regulator through its performance must earn legitimacy and the respect of stakeholders. But, until that happens over a period of time, it is important that he should be guaranteed by law the conditions under which he would be allowed to operate to gain the legitimacy. This is particularly important in a country like ours where the political system and bureaucracy are not yet ready to reconcile to the idea of independent regulation.

Regulator and the Consumer

By Mr S Sundar and Mr S K Sarkar[1]

In India, until recently, governmental instrumentalities were largely responsible for the provision of infrastructure services, and were virtual monopolies. The quality of services was poor, inefficiencies were many, and prices were not competitive. The utility's well being and not that of the consumer, was the sole concern of government.

The approach to new regulation seeks to change this scenario. The consumers are now being brought to the centre stage. This is as it should be, as he is the "king" in a competitive market. Regulatory regimes over the world now have specific provisions for protecting consumer interests. In UK, the electricity regulator protects the consumer interests on prices, security of supply, and quality of service. In USA, Public Utility Commissions are mandated to frame rules for consumer protection, and also for their protection from fraud, and other unfair trade practices.

In India too, consumer interests are now being recognized. The electricity regulator in Orissa is mandated to consider the interests of the consumers during tariff setting, the central electricity regulator is required to advise the Government on a tariff policy which is fair to the consumers, and the telecom regulator is bound by law to protect consumer interests as also to set and monitor the quality of services.

---

[1] Mr S Sundar is a former Secretary to the Government of India, and currently a Distinguished Fellow in The Tata Energy Research Institute (TERI). Mr S K Sarkar, Ph D is a Fellow in the TERI. The views in the article are personal. Published in The Economic Times May 14, 1999. New Delhi.

Since the job of a regulator is to balance the interests of various stakeholders, it has necessarily to see that the producers get an adequate return. This, among others, calls for reduction of subsidies as well as cross subsidies. This also implies a cost linked tariff regime. The telecom regulator in its tariff order of 1999 has re balanced the costs between the local calls and the long distance calls. In Orissa, the tariff set by the electricity regulator has pushed up the prices paid by some categories of consumers. Consumers must realize that they have to pay an appropriate price for services.

When a consumer is asked to pay for services, he must be assured of quality and reliability. In the UK, standards of services were introduced in 1991, and sanctions were imposed on the utilities for violation. The Edenor, a large electricity distribution company in Argentina, increased the number of satisfied customers by about 14 percent as well as improved the quality of service by 65 percent during 1993-98. This process has just started in India. In the telecom sector TRAI has now initiated a debate on the quality of telecom services, and the Orissa Electricity Regulatory Commission has set standards of performance for the utilities.

Regulation provides a platform for arbitration of consumer complaints. In Israel, complaints relating to electricity services are addressed by the utilities, but the regulator involves itself in consumer complaints as arbitrator, and even when there are no complaints, intervenes in matters of interest to the general public. In USA, the utility commissions help the consumers to settle disputes with the utilities, and also determine the corrective measures that the utility should initiate. In contrast, India's telecom regulator handles complaints only from groups of consumers leaving individual complaints to be handled by consumer courts. The electricity regulator in Orissa has, however, developed a mechanism for addressing individual complaints, and, this has enhanced its credibility. It is also now in a position to identify corrections needed in utility practices, and also areas for consumer education.

Who will impart such consumer education? In California, the Consumer Services Division of the Public Utility Commission has developed a strategy for consumer education, and is implementing it through outside experts. In contrast, the electricity regulator in Orissa is educating the consumers directly on the regulatory basics, quality issues, and consumer rights. The TRAI and CERC legislations, however, do not contain any provisions in this regard. The extent of consumer awareness, and of consumer participation in the regulatory process will determine the degree of success of regulation in a country. Other countries seem to have realized this. It is time that we in India recognize that the ultimate objective of sound regulation is to advance consumer interests, and establish a process for the education and empowerment of consumers through the promotion of consumer groups.

Regulators can't pack a punch without financial muscle.

S Sundar and S K Sarkar[1]

A constructive relationship between government and the regulator is essential for the success of regulatory reform. Such a relationship can develop only when governments empower the regulators so that they can hold their own. It is, however, not easy to empower the regulators. Bureaucracies all over the world do not willingly give up the powers that they enjoy. Most countries have sought to provide for regulatory autonomy by setting up the regulators through specific legislation. In India too, where the bureaucracy is powerful, regulation has been established through legislation in order that the regulator's autonomy is not left to the magnanimity of the bureaucracy.

However, legislation alone cannot ensure autonomy unless the legislation provides for certain essential safeguards to ensure autonomy. Safeguards that have been considered essential the world over are a transparent selection process, clearly stated qualification and disqualification criteria, prescribed tenure, freedom to obtain expertise and authority to incur expenditure independent of government approval, and finally criteria for removal.

All the regulatory legislation in India provide for qualification criteria for selection of regulators, and these invariably include sufficient experience in economics, finance, law, administration, consumer affairs, or industry. Sector experience has not been considered essential.

At present, a majority of the chairmen of regulatory bodies are either retired civil servants or judges. It is often argued that since regulatory authorities exercise the functions and powers which were earlier vested in government and enjoy quasi-judicial powers, they are best manned by persons who have served in government or the judiciary.

But regulators are neither fish nor fowl; they are not the government and certainly not the judiciary. And their mandate extends beyond tariff setting to taking measures as are necessary to introduce competition, increase efficiency, provide quality of service standards etc. These call for a thorough knowledge of the sector and a vision for its future, and both these qualities are not necessarily possessed only by retired civil servants or judicial officers. They can also be found in the industry, amongst professionals, and the academia, but the process of selection and conditions of service do not encourage a wider selection.

All the regulatory legislation contain provisions that restrict the scope of employment of regulator once he demits office, and this discourages younger and competent people from the industry and professions from accepting appointments as regulators. The post of Chairman, CERC which has been vacant since February 2001 was reportedly offered to a highly reputed professional in the electricity industry and was turned down.

All the regulatory legislation in India provide for a fixed tenure for the regulators. The tenure is normally five years subject to an age restriction. So far, early termination of regulators' tenure has occurred only in the case of TRAI where six of its seven members were removed from office when the Authority was reconstituted through an

---

[1] The authors are with the Tata Energy research Institute, New Delhi. In Times of India, Government Business (page v) June 22, 2001

ordinance in 2000. Interestingly, the port legislation has a provision for superseding the TAMP.

A regulator cannot be independent unless he enjoys both financial and organisational autonomy. The Indian regulators, unfortunately, enjoy neither. CERC and the state electricity regulators such as OERC have to depend on the government for determining their annual budgets. CERC's budget is charged to the Consolidated Fund, but this does not provide for autonomy as CERC has to seek government's approval for incurring expenditure on individual activities. TAMP is wholly dependent on government for its budget. The TRAI Act provides for a Regulatory Fund, which TRAI can administer. But this fund is yet to be established and TRAI continues to depend on government for funding.

One of the reasons for establishing regulatory authorities outside government was that they could draw expertise from the market which governments cannot at civil service salaries. Unfortunately, the regulators in India are not free to hire staff of their choice at salaries they command. The result is that regulatory authorities are largely manned by staff drawn on deputation from government or the regulated public utilities. Given their background and mind set, they lack a commitment to the regulatory cause and suffer from a conflict of interests. Training of regulatory staff, thus, assumes great importance.

The regulator clearly should have powers to call for information, and conduct an inquiry into the working of any service provider and issue such directions as are necessary for the proper functioning of the service providers. While TRAI enjoys these powers, they are not available to TAMP or CERC. The regulators should also have access to reliable data, and this is particularly important for tariff setting. The data mostly rests with the regulated entities, and is not always reliable. Regulators should, therefore, have powers to prescribe the accounting standards and information systems that the regulated entities should adopt.

The legislation that envisages independent regulation should also provide for all the safeguards necessary to ensure autonomy. The Indian legislation have not gone far enough in this direction largely because there has not been a coherent policy on regulation. Drafting of the legislation in each sector has been left to the Ministry concerned, and the ministries have been reluctant to let the regulators become independent. It is now time for government to identify the lacunae in the legislation and initiate changes in order to empower the regulators.

Empowerment of the regulators is a necessary but not adequate condition to improve regulatory governance. In the United States, infrastructure services were largely provided by the private sector, and independent regulation became necessary to regulate private monopolies and oligopolies. The situation in India is different. Infrastructure services have so far been largely provided, and continue to be provided, by the government and public utilities like VSNL and MTNL in the telecom sector and the SEBs in the electricity sector. Independent regulation is all the more difficult when the regulated entities are powerful, government owned entities. It is, therefore, necessary that even as regulators are empowered, regulatory reforms should be accompanied by the restructuring of the public utilities and their privatization.

Accountability helps regulate the regulators

S Sundar and S K Sarkar[1]

In our last article, we had argued the case for empowering the regulator. An autonomous regulator must, however, be accountable for his actions. It is only regulatory accountability that would make independent regulation acceptable to all stakeholders, especially the government.

Clearly, the regulator must be subject to public policy as laid down by government in office. And the Supreme Court has more than once held that what is public policy is best left to the government to decide. The exercise of regulatory discretion is also constrained by the government's right to issue policy directives to the regulator, which right is contained in all the regulatory legislation. Thus the apprehension that ministerial control over the regulator has been diluted in the new set up is not correct. Nevertheless, it has not to be borne in mind that in a Parliamentary democracy, the minister in charge is ultimately responsible for all the decisions and actions that impact on the sector that he oversees. And it is the government through Parliament that has transferred its various powers to the regulators. The regulators should, therefore, recognize this ultimate responsibility of the ministers, and consult with him or at least keep him informed as in UK, without compromising regulatory independence.

The larger issue is how to make the regulator accountable to the Parliament. In UK, for example, procedure for Parliamentary oversight over regulatory activities has been established over the years. The Parliamentary Select Committee in UK oversees the regulatory activities, conducts inquiry involving into the regulated industry, and calls for witnesses from regulated entities, the regulator, and consumer groups. The oral hearings are made public. Although the Committee has no formal powers to issue directives to a regulator or a regulated entity, its observations are given sufficient importance: the regulator has to prepare a formal response to their observations. In case the regulator does not agree with the views of the Committee, the reasons for not doing so have to be recorded. In short, the relationship provides for Parliamentary supremacy without undermining regulatory autonomy.

---

[1] The authors are with the Tata Energy Research Institute. In the Times of India, Government Business (p v) July 6, 2001.

The procedure for Parliamentary oversight over the regulator has yet to be established in India. The Standing Committee on Energy recently reviewed the working of CERC and questioned CERC's decision on availability based tariff; the Committee further directed the government to review the entire gamut of work of CERC. While the Committee's right to comment on the working of CERC cannot be questioned, it would have been appropriate for the Committee to have heard the CERC before passing comments on its working. It is important for Parliamentary Committees and regulators to understand and respect each other's work. The legislative provisions for audit of accounts and expenses of regulatory authorities by the C&AG is yet another measure to ensure regulatory accountability. And here again, the C&AG's role should be carefully defined so that his scrutiny does not extend into substantive decisions of the regulators.

Transparency in decision making is another effective mechanism to ensure accountability. Fortunately, the need for transparency in decision making has been recognized and mandated by the legislation in the telecom and electricity sectors. In the port sector, TAMP on its own has adopted this process even though there is no legislative requirements. Regulators in India either hold quasi judicial hearings as in the electricity sector or go through a process of consultation as in the telecom and port sectors. In some cases, a combination of the two processes has been practised. Both the quasi judicial and consultative processes ensure that the stakeholders are provided with every opportunity to be heard. This apart from ensuring transparency in decision making provides a forum to vet the quality of data, and reduces the cost of regulatory compliance.

Further, steps to enhance transparency could include measures to make the thinking of regulators known to the stakeholders. Regulators, for instance, could make their draft regulatory orders public, obtain the views of stakeholders on the draft, and then, pass final orders. Such a procedure would considerably enhance the quality of regulatory decisions, make them more acceptable, and reduce the costs of compliance.

That regulatory decisions can be contested in appeal is another measure to ensure that regulators do not misuse their powers. All regulatory legislation in India provides for appeals against regulatory decisions to the High Courts as in the electricity sector, or to a special Tribunal as in the telecom sector. Many of the regulatory decisions have in fact been challenged in the courts. The appeals filed by NTPC/PGCIL against CERC's tariff orders, and the reference filed before TDSAT against the TRAI's recommendation on the limited mobility are some examples. These appeals go to remind the regulators that their decisions are not necessarily final , and therefore cannot be arbitrary.

Regulators have also to be consistent. They must take care to see that their decisions stand the test of 'legitimate expectation' both in a procedural and substantive sense, and the concept of 'promissory estoppel'. After all, one of the objectives of regulatory reforms is to attract private investment. And private investment will be forthcoming only if the investors have confidence in the continuity of regulatory principles and tariff policies over time. The regulated utilities also need to know that regulatory approaches towards efficiency improvements and cost reduction are not one shot exercises, but would be continued over time.

The measures discussed above are some formal steps to ensure regulatory accountability but these alone are not enough. In the ultimate analysis, the regulators must realize that it is only by demonstrating to the stakeholders that their actions are consistent, always in the public interest, and are intended to promote developments of the sector, they can establish their legitimacy and credibility. Accountability, is therefore, not a procedural or accounting issue; it is a core issue in sound regulation.

12, 1999, the Government issued a direction under Section 25 of the TRAI Act 1997 for keeping the Tariff order in abeyance, as the order did not protect the low-income users. TRAI then requested the Government to clarify the basis for the direction issued under Section 25. No clarifications were issued by the Government, and instead, it agreed on March 27, 1999 to implement the Tariff order, leaving it to MTNL and DOT to set the rental and call charges below the ceiling set by the TRAI. And TRAI in turn agreed to delay the implementation of its tariff order by a month. There is a lesson to be learnt from this episode. Governments must realize that they cannot act arbitrarily in future and should abide by the law which in this case required the government to both consult with the regulator before issuing a directive and to issue the directive before the tariff order was promulgated. In some ways, it was unfortunate that the matter was resolved between the parties on ad-hoc basis without addressing the basic issue of the relationship between the two. Perhaps, a reference of the dispute to the judiciary would have resulted in guidelines to govern the relationship between the government and regulator for the future.

Conclusion

In the ultimate analysis, the test of success of regulation would depend on how infrequently the provision on " policy direction" has been used. In Sri Lanka, for instance, the telecom regulator is not independent, and all its recommendations go to the government for implementation. Yet, it has been able to generate confidence among the investors and consumers, and establish credibility largely through its competence and government's respect for the institution. The consultative mechanisms and mutual agreements which are transparent, must eventually take the place of " policy directions", as it has in the developed countries like UK. There will be little scope for confrontation between a government that respects independent regulator, and a regulator who is transparent and credible.

References

1. The Telecom Regulatory Authority of India Act 1997
2. The Port Laws (Amendment) Act 1997
3. The Electricity Regulatory Commissions Act 1998
4. The Orissa Electricity Reforms Act 1995
5. MacEdowney John. F. *Public Law.* P 453. 1998. Sweet and Maxwell Limited. 100 Avenue Road. London. UK.

Electricity Deregulation

Electricity distribution privatisation- Experience and concerns[1]

This paper examines the Orissa and Delhi privatization experience. Though the Delhi privatisation was structured to overcome some of the concerns arising out of the Orissa privatization, the fundamental problem of lack of investors was reflected in the process. The paper attempts to raise certain issue that need to be addressed and documented.

Background- Reform Process

The Government of India (GOI) allowed private sector participation in generation as a part of its overall economic liberalization programme, initiated in early nineties. The inadequacy of this policy response was subsequently exposed. Thus while a large number of private participants showed interest in setting up projects, very few have been able to tie up finance for their projects. It was recognized that fundamental organizational changes would have to be effected to restore financial viability of the sector, as the existing vertically integrated monopolies were not in a position to improve their performance. It was also felt that privatisation of infrastructure services was not possible given the existing structure of the infrastructure sector. Like the State Electricity Boards tottering on the brink of bankruptcy, private investment was not forthcoming in the generation as the SEBs was in no position to pay for the power purchases.

Hence therefore the need of restructuring the current electricity sector was felt. The goal of restructuring was to increase transparency and accountability, viability of industry, facilitate private sector participation and to promote a competitive market. It was intended to bring about a change in the role of the government, from that of a service provider to that of a policymaker. The responsibility for efficient operations will gradually shift towards private sector, and the government will continue to be responsible for long-term planning, and legislation and evaluation of sector performance.

---

[1] Vivek Sharma, TERI. Author can be contacted at vsharma@teri.res.in

The first concrete step was taken in Orissa where the World Bank initiated a reform package. The electricity board was dismantled and its generation/transmission functions were separated. A regulatory commission was set up, whose initial and major responsibility was to set tariffs. Finally separate distribution companies were also set up which were privatized in 1999.

In the meantime the Government of India has also taken the initiative to arrive at national consensus on reforms. In December 1996, the Central Government and State Governments reached a consensus on sector reforms under the CMNAPP (Common Minimum National Action Plan for Power). In 1998, the Electricity Regulatory Commissions (ERC) Act was passed, which positioned CERC, and also enabled states to set up regulatory authorities. Since than, 18 state electricity regulatory commissions have been established. Some have been created through specific legislation and others through enabling provisions in the ERC Act, 1998. Also, in many states the vertically integrated monopoly business has being unbundled.(Annex 1-Status of reforms)

In contrast to the Orissa model which is also being followed by AP, Haryana, Delhi etc, states such as Gujarat, Tamil Nadu, and Kerala proposes to follow a different model: in the initial stage, distribution circles of SEBs are hived off into profit centres with full autonomy. In UP, a further different approach is attempted wherein private sector participation is limited to specific cities in order to avoid risks for dividing the states into zones on inequitable basis.

In spite of the fact, Orissa and Delhi went ahead with distribution privatisation, there are many issues that need to addressed and documented. One of biggest issue that is common in both the reform processes is lack of investors. We would be discussing this in greater length in the subsequent sections. Before that, let us briefly look at the different events in Orissa and Delhi reform process and issues.

Orissa Experience

As a part of the reform process, the OSEB in 1995 was restructured and split up into Grid Corporation of Orissa (GRIDCO) to look after the transmission and distribution business and Orissa Hydro Power Corporation (OHPC) took over hydel power generation. Thermal generation was already under a separate corporation, namely the Orissa Power Generation Corporation (OPGC). The Orissa Electricity Regulatory Commission was set up to discharge the functions of the independent regulation under the Reform Act. Subsequently in 1999, 51% of Gridco's shareholding in all its 4 distribution subsidiaries, namely CESCO, NESCO, WESCO and SOUTHCO, initially incorporated as successor entities of the 4 distribution zones, were sold to private parties. (See annex 2 for the chronology of events relating to Orissa restructuring and privatisation of distribution).

In recent years, there is considerable discussion on the Orissa power sector reform and it has been severely criticized by some experts. Some of reasons for criticism are discussed below.

Baseline data- Estimates of T&D losses

Among the major benefits expected from reform in Orissa was in the area of reduction in T&D losses. The World Bank's Staff Appraisal Report (SAR) which spelt out the reform scheme and set the targets and milestones, envisaged reduction in T&D loss from a level of 39.5% in 1996-97 to 35% in the following year, ultimately coming down to 23% by 2002 -03 . Keeping in view this projection, the OERC had fixed 35% as the benchmark level of T&D loss in determining tariff requirement. The actual T&D loss as per the Kanungo Committee report (2001) was 49.5% in 1996-97. At the end of two years of privatisation, the DISTCOs are, however, showing some improvement in the system: the AT&C losses decreased from 57% to 56 % in 2000-01. Apart from T&D Losses the SAR assumed 100% collection efficiency from 1996-97, but in practice, the actual collection efficiency even for the year 1999-00 was 73%. It went up marginally by 4 % during 2000-01.

Extent of overestimation of Demand

In Orissa, viability exercise under the power sector reform has been worked out on the basis of certain assumptions of which projection of the demand for power was a major one. Unfortunately, the demand growth that came to be realised was very different as may be seen from the following

Extent of over estimate of demand

	Estimated	Actuals	% Actual to projected
1996-97	9785	9306	95.09%
1997-98	10902	9771	89.63%

1998-99	12726	10128	79.59%
1999-00	13902	10229	73.58%
2000-01	14809	11231	75.84%

The assumption thus turned out to be highly ambitious compared with actuals. Apart from this, not only in terms of totals but also in the share between EHT and HT/LT demand. The latter is even more important for viability purpose because much of the T&D loss occurs in the HT/LT segment.

Extent of Revaluation

The assets of various entities were up valued during the privatisation process. With the formation of OHPC in 1996, hydro power stations came to the corporation with their assets revalued. The upvaluation was to the extent of Rs.81.2 billion; from Rs.36.4 billion to Rs 119.7 billion. The revaluation of assets have resulted in the increase of the depreciation requirement of OHPC from Rs. 1.452billion in 1995-96 to Rs.4.775 billion in 1996-97. Higher amounts were also to be provided towards return on equity. As a result, hydro power which constitutes close to 40% of the total power requirement of the State, registered a cost increase from 20 paise per unit in 1995-96, to 38 paise per unit in 1996-97 and further to 49 paise per unit in 1997-98.

Similarly the asset revaluation in the case of GRIDCO was from a book value of Rs.120.1 billion to Rs.239.5 billion, an addition of Rs.119.4 billion[1]. In this case, revaluation of assets required much higher depreciation provision, up from Rs.5.488 billion in 1995-96 to Rs.13.296 billion in 1996-97 and progressively thereafter. Asset revaluation also resulted in larger return on capital base which again raised the cost of transmission and distribution.

Disinvestment proceedings

Orissa government appropriated to itself the substantial moneys paid by buyers for buying the distribution circles. The Government earned Rs.1590 million through dis-investment of 51% of its shares by private sector participation in four distribution circles. The government did not use these proceeds to pay off accumulated liabilities and outstanding of OSEB.

Transition support and poor financial projection

Prior to reforms the Government of Orissa was providing subventions to OSEB under section 59 of the Electricity Supply Act 1948. This practice was withdrawn immediately in the post-reform period on the basis of assumption that GRIDCO on its own would start earning profit from the year 1997-98. In the process GoO saved subsidy payments of about Rs.27.70 billion during the period 1995-96 to 2000-01. However, this assumption turned out to be incorrect

As per the projections made by the consultants of OSEB and intimated to prospective bidders, it was expected that WESCO & NESCO would achieve turn around by 1999-00, SOUTHCO by 2000-01 and CESCO by 2001-02. However, none of the distribution companies could achieve these results and suffered losses even at the end of the third year (Table 12). Such divergences between projections and actuals are indicative of the poor quality of data with government owned electricity undertakings since such data form the basis for the projections.

Table 1. Poor projections vs. actual

	1999-00		2000-01		2001-02*	
	Projected	Actual	Projected	Actual	Projected	Actual
WESCO	65.6	(581.8)	389.3	(1118.9)	493.1	(408.1)
NESCO	168.6	(542.7)	467.9	(1228.0)	778.3	(2080.5)
SOUTHCO	(258.5)	(873.7)	435.0	(860.5)	222.0	(837.2)
CESCO	(1295.6)	(1777.3)	(391.5)	(1722.9)	1321.2	(2396.8)

Source. Projected figures given in the IM and actual performance figures are taken from OERC tariff orders.

*Unaudited

Delhi Experience

The blueprint of DVB restructuring and privatisation was envisaged in the strategy paper issued by the Government of NCT of Delhi in February 1999. Subsequently, Delhi Electricity Regulatory Commission was set up on March 3,

---

[2] By way of parenthesis, the private buyers of distribution circles apparently failed in their due diligence by accepting such initial information without detailed studies of there own.

1999 under the Electricity Regulatory Commission Act, 1998 (Central legislation). Later, Delhi Electricity Reform bill was passed by the Delhi Assembly and got Presidential assent on March 11 2001.

In the meantime, DVB submitted five year tariff principles to DERC, intended to facilitate the reform process, along with the Annual Revenue Requirement (ARR) for the year 2001-02. However, DERC issued tariff order on May 23, 2001 fixing ARR for the year 2001-02, but not approving five year tariff principles.

Subsequently, as a part of reform process, the DVB was restructured and split up into six shell companies. The notification dated November 20, 2001 and November 22, 2002 laid down the principles and policy direction for transfer scheme and privatisation of distribution companies. Following this, the Delhi distribution business was handed over to private companies on July 1, 2002. (See annex 3 for the chronology of events relating to Delhi restructuring and privatisation of distribution).

The Delhi privatisation is structured to overcome some of the concerns arising out of the Orissa privatisation. The Delhi privatisation structure attempts to reduce the tariff uncertainty by fixing a loss curve to be used by the regulator in setting tariffs. It also provides for the total amount of subsidy that can built into the tariffs and financed by the Government. Various components of restructuring and privatisation plan, the policy direction issued by the Government of Delhi are discussed below.

Base line data- AT& C Loss

A methodology for arriving at the losses in the distribution business was devised as per the policy direction laid down by the Government of Delhi[3], which is named as Aggregate Technical and Commercial (AT&C losses). The AT&C loss can be determined by the following formula:

AT&C Loss % = 1 - [billing in units/inputs in units * collection in rupees/billing in rupees]

In simple terms, AT&C losses can be expressed as the difference between units realised and units input into the DISCOM as a ratio of units input into the DISCOM. It appears that this principle of measuring losses appears to be better step than the usual practice of taking the T&D loss number and ignoring the problem of erroneous billing and collection inefficiency.

---

[3] On November 22, 2001

According to the policy direction, bulk supply tariff petition was submitted and the DERC approved the opening level AT&C losses, as shown in the following table.

Table 4.10: Opening Levels of AT&C Loss

DISCOM	Opening Level of AT&C Loss
CEDEDCL	57.2%
NNWDDCL	48.1%
SWDEDCL	48.1%
ALL DISCOMs	50.7%

Financial Restructuring plan[4]

Valuation of assets

Opinions vary as to what could be the best methods for valuation of assets of a public entity. The traditional method of valuation of assets is however based on utility's book value using discounted cash flow method. On the contrary, DVB has used a business valuation method in this regard. The assets were valued by assuming that the electricity business will become self sustaining within five years of privatisation, there is no retail tariff shocks to the consumers, and the support from the Government of Delhi for funding initial losses of about Rs.3450 crores is guaranteed. This was intended to aviod problems that arose due to revaluation of assets in the case of Orissa.

Financial Engineering

The Delhi blueprint also provided for creation of a holding company which will retain all the liabilities of DVB and also hol 49% share in the unbundled business. This was to facilitate the generation, transmission and distribution companies to start with a clean balance sheets.

Out of the total DVB's liability of Rs. 23137 crores, the unserviceable liabilities amounting to Rs. 19977 crores (i.e. DESU period liabilities of Rs.12953 crores, Rs.4457 crores of bonds issued against power and fuel liabilities and treasury bill liabilities of Rs.887 crore) are transferred to a newly created holding company. And the remaining Rs. 3160 crores of serviceable liabilities are assigned as the value to the assets of the successive entities. The entire equity of the holding company is issued to the Government of Delhi.

---

[4] This section is based on the presentation given by DVB in TERI on 25th January 2002

Bidding process and inventive for investors

As per the policy guidelines, competitive bidding was to done on the AT&C loss reduction levels, whereas in Orissa the bidder was selected based on the highest offer for 51% face value of the share. In Delhi the criteria for selection was maximum reduction in AT&C losses over a 5-year period above the minimum level specified by the Government. Accordingly, the Government of Delhi decided on the minimum reduction targets. However, on the date of opening of bids only two bids were received, both offering AT&C loss reduction much lower than the targets set by the Government. As these bids were not satisfactory, a core committee consisting of senior officers negotiated an agreement. The minimum AT&C loss reduction targets set by the Government, the original bids received and the revised negotiated and accepted bids are given in the table below:

	2002-03		2003-04		2004-05		2005-06		2006-07	
	Min	Rvsd	Min	Rvsd	Min	Rvsd	Min	Rvsd	Min	Rvsd
Central East (BSES)	1.50	0.75	5.0	1.75	5.00	4.00	5.00	5.50	4.25	5.00
South West (BSES)	1.25	0.55	5.0	1.55	4.50	3.30	4.50	4.25	4.00	5.60
North-North West (TATA)	1.50	0.50	5.00	2.25	4.50	4.50	4.25	5.50	4.00	4.25

Total AT&C loss reduction targets for the period 2002-03 to 2006-07 (figures in percentage)

DISCOM	Minimum	Original Bid	Revised Bid
Central East	20.75	14.00	17.00
South West	19.25	13.35	17.00
North North-West	19.25	13.50	17.00

As an incentive to the private players, on any additional reduction[5] (i.e. beyond the Government reduction targets) the utilities will retain 50% of the additional revenue realised, the remaining being passed on the consumers as a rebate on tariffs. Also the investor will get assured 16% return on the issued and paid up capital and free reserves till the end of 2006-07 subject to all expenses as permitted by the DERC.

---

[5] On the other hand, if the actual AT&C loss reduction of a DISCOM is worse than the AT&C loss reduction level quoted in the bid, the entire short-fall on account of the same shall be borne by the DISCOM. In the event the actual AT&C loss of a DISCOM is worse than the minimum AT&C loss reduction level stipulated by the Government but better than the loss reduction level quoted in the bid, the entire additional revenue from such better performance shall be counted for the purpose of tariff fixation.

Transition support by Government

In sharp contrast to Orissa, the Government of Delhi will make available to the Transmission Company an amount of up to approximately, Rs. 3450 crores during the period 2002-03 to 2006-07 as to bridge the gap between its revenue requirement and the bulk supply price which it may receive from the distribution licensees. It is expected that the distribution companies would be in a position to achieve a turn around during this period and would become self-sustaining.

Common issue - Lack of investors

In spite of the improvement over the Orissa case, the DVB's distribution privatisation process was not able to attract many investors. At the time of RFQ (Request for Qualification), as many as 31 investors has shown interest, 7 bidders submitted SOQs (Statements of Qualification) and finally only two bidders submitted there bids after due diligence.

Similarly in Orissa, out of 51 interested investors, 11 were pre- qualified, whereas finally only two bidders submitted there bids.

The reasons for an insufficient response to privatisation efforts could have been several including unviable model, regulatory and political risk etc. Some issues are mentioned below:

a) Alternate models of privatisation: Alternate models of privatisation that gives more choice and freedom to buy and sell electricity can be explored. In the single buyer model, the private distribution company has to buy power from one transmission company. This restricts their choice to buy power from other sources, which possibly is less expansive. Further, urban area privatisation, zonal privatisation or micro privatization could encourage more players and competition. TERI has undertaken an analysis of one such model under the title of 'Inset Appointments'. An Inset appointment is an approval that enables an entity to provide distribution and supply services to a limited area within the franchise area of the existing licensee. The arrangement is perceived to improve the distribution services by virtue of its smaller size and hence better management control.

b) Regulatory risk: It appears that there is a perception among investors that the price-setting methodology (based on the ROR concept) employed by regulatory agencies is not conducive to long-term investments and multi year tariff/principles would give them some certainty about the future returns and tariff. Further, regulatory uncertainty regarding annual investments and other costs approval, hesitates the investors to put their money into the business. In the past, some utilities have submitted application for multi year framework but the Commission has not accepted citing that the data is unreliable and information available is not conducive to issue multi year framework.

c) Political risk, Payment risks: A further risk lies in securing political support to implement harsh measures for reducing inefficiencies. Further, payment risk lies because of many non-paying customers are enjoying political patronage. Government agencies like police stations, water works, schools, public hospitals, etc. do not routinely pay their bills due to their financial difficulties. To certain extent, State support agreement with the government and a strong anti-theft legislation could mitigate this risk. This agreement will assure that the private utility gets the required support for the state administration, staff, police (at cost) in curbing theft, and disconnecting illegal connection Without this, it may not be possible for the private utility to improve efficiency as it has happened in Orissa.

Annex 1
Status of reforms

Sharma Vivek, TERI

1) Uttar Pradesh
Generation companies:
UPRVUNL : Uttar Pradesh Rajya Vidyut Utpadhan LImited (Thermal)
UPJVNL: Uttar Pradesh Jal Vidyout Nigam Limited (Hydro)
Distribution company:
UPPCL (both transmission and distribution company), KESCO (Urban city), NPCL (Urban City)
2) Orissa
Generation company OHPC: Orissa Hydro power Corporation limited
OPGC: Orissa Power generarion corporation limited
Transmission company: GENCO
Distribution company (privatised): WESCO, NESCO, SOUTHCO, NESCO
3) Andhra Pradesh
Generation company: APGENCO (Andhra Pradesh Generation corporatrion limited)
Both hydel and thermal plants comes under this company.
Transmission company: APTRANSCO (Transmission corporation of Andhra Prades LImited)
Distribution company: APEPDCL, APCPDCL, APNPDCL, APSPDCL (Southern Power Distribution company of Andhra Pradesh
4) Rajasthan
Generation company: RVUN: Rajasthan Vidyut Utpadan Nigam
Transmission company: Rajasthan Rajya Vidyut Prasaran Nigam Limited(RRVPN)
Distribution company: AVVNL, JVVNL, JOVVNL
5) Haryana
Generation company: Haryana Power generation corporation limited (HPGCL)
Both hydel and thermal plants comes under this company.
Transmission company: Haryana Vidyut Prasaran Nigam Limited (HVPNL)
Distribution company: Uttar Haryana Bijli Vitaran Nigam LImited (UHBVNL), DHBVNL
6) Delhi
Generation company: Indraprastha thermal power generation company limited; (Genco)
Transmission company: Delhi power supply company limited (Transco)
Distribution company (Privatized): C-EDEDCL, S-WDEDCL, N-NWDDCL

Box 1: Summary of the electricity sector unbundling in the different states

Annex 2:

Chronology of events in Orissa power sector reforms

Sharma Vivek, TERI

November 1993	Chief Minister of Orissa confirms the State Government's commitment to power sector reforms
April 1995	GRIDCO and OHPC incorporated under Companies Act, 1956
January 1996	Orissa Electricity Reforms Act, 1995 is notified in Official Gazette
April 1996	Reform Act comes into force
	GRIDCO takes over T&D business from OSEB
	OHPC takes hydro projects from OSEB & DoE
	OERC becomes operational
	Management contract awarded to BSES in respect of central zone
	OERC issues licences to GRIDCO
	Management contract to BSES terminated
November 1997	Chief Minster of Orissa announces the privatization of 4 DISTCOs
	GRIDCO incorporated four wholly-owned subsidiary companies
November 1998	The four distribution subsidiary companies become operational
Jan-April 1999	OERC issues separate transmission (to GRIDCO) and distribution (to 4 DISTCOs) licences
April 1999	BSES takes over WESCO, NESCO and SOUTHCO
September 1999	AES consortium takes over CESCO
August 2001	Following AES pullout, OERC vests management of CESCO in a chief executive officer

Annex 3

Sharma Vivek, TERI

Sequence of events and summary of main features of privatisation package

February 1999	Govt. of NCT of Delhi issued Strategy Paper
March 3, 1999	Delhi Electricity Regulatory Commission set up under Electricity Regulatory Commission's Act, 1998 (Central legislation)
October 28, 2000	Delhi Electricity Reforms Ordinance, 2000 promulgated On the same day, Tripartite Agreement signed between GNCTD, DVB and employee representatives
November 11, 2000	Delhi Assembly passes Delhi Electricity Reform Bill. Bill then sent for Presidential assent
January 17, 2001	Investors' Conference organized jointly by Power Finance Corporation, GNCTAD and DVB. More than 100 attended - major national and International companies, financial institutions, embassy representatives and industry associations.
January 30, 2001	DVB submits proposal for Five-Year Tariff Setting Principles to DERC, intended to facilitate the reform process, along with ARR for 2001-02
February 15, 2001	Request for Qualifications (RFQ) document issued inviting statements of Qualifications (SOQs) by April 6, 2001, (later extended to May 15)
March 11, 2001	Delhi Electricity Reform Act 2000 comes into force, after Presidential assent
May 10, 2001	Committee to evaluate responses set up under Chairmanship of Chief Secretary with representatives of Ministry of Power, CEA and a senior outside expert, besides GNCTD officers
May 15, 2001	Seven prospective bidders submit SOQs by due date Committee under Chief Secretary prequalifies six: AES, BSES, China Light and Power, CESCON, Reliance and Tata Power
May 23, 2001	DERC issues order fixing ARR but not improving tariff setting Principles
July 2001	Six 'shell' companies registered; they will become the successor

	Entities of DVB on operationalisation of the Transfer Scheme
July 16, 2001	Consultant submit Final Report, with the package substantially in its final form. Processing in Secretariat begins again
October 5, 2001	GNCTD Cabinet approves Final Report
November 20, 2001	Transfer Scheme rules issued
November 22, 2001	Policy Directions under Section 12 of DERA
December 21, 2002	Bulk Supply Tariff Application filled
February 22, 2002	DERC order fixing opening loss levels and initial BST
April 10, 2002	Bids received from bidders
May 31, 2002	Cabinets meet and approves report of Core Committee, and consequential amendments to Transfer Scheme Rules and further Policy Directions in modification of those issued earlier
June 26, 2002	Consequential amendments to Transfer Scheme Rules issued
June 27, 2002	Share Holder's Agreement and other agreements signed
June 30, 2002	Transfer Scheme operationalised
	Management handover effective midnight June 30/July 1.

References:

---

[i] Sankar TL & Ramachandra Usha; "Electricity Tariff Regulators", 27 May, 2000; Economic and Political Weekly.

[i] Notification issued by the Government of National Capital Territory of Delhi on 22nd November 2001.

[i] Forum, "An uphill task", 2001, November issue, Powerline.

TERI, New Delhi
K Ramanathan and Gaurav Bhatiani

Background paper

Transition to a liberalized environment: experiences and issues in regulation 69-98

Introduction

The electricity industry forms a critical part of India's infrastructure and its continued expansion is necessary to ensure rapid economic growth and the overall success of the liberalization efforts. Recognizing the importance of ensuring that sufficient resources are available to meet the rapidly growing demand, the GoI (Government of India) initiated a series of policy reforms in 1991. The main objectives of the reform process have been to improve the performance of the industry, correct distortions existing in the tariff structure, ensure dynamic and sustainable growth of the electricity industry in India, and encourage and facilitate participation of private capital, wherever necessary.

Traditionally, the electricity industry in India has been regulated and owned by various government agencies and organizations. The role and participation of the private sector has been limited and confined to specific areas of small jurisdiction and consumer base. The government, through the authority conferred on it by different laws, has taken upon itself the role of the developer, promoter, and regulator of electricity.

The subject of electricity is covered under the concurrent list in the Constitution of India, implying that both the central government and the state governments have the power to legislate the sector. A number of organizations and departments perform specific tasks in aiding the development of the sector. These include the MoP (Ministry of Power, GoI), CEA (Central Electricity Authority), NTPC (National Thermal Power Corporation), NHPC (National Hydro Power Corporation), PGCIL (Power Grid Corporation of India Limited), PFC (Power Finance Corporation), REC (Rural Electrification Corporation), and SEBs (state electricity boards).

The total installed capacity, as on 31 October 1998, was approximately 90 000 MW with the share of hydropower being approximately 25%. In spite of significant capacity additions during the five decades following Independence, various parts of the country continue to experience shortages of energy and peak power. During 1997/98, energy shortage was of the order of 8% while the peak shortage was approximately 11%. The operational performance of the sector has been characterized by low PLF (plant load factor) and high T&D (transmission and distribution) losses. Lack of financial resources and a desire to improve the performance o the industry have been the key drivers of the reform programme.

The sector has witnessed significant and rapid changes during the past few years. These involve new policies for inviting private participation in the sector, setting up of independent and autonomous regulatory authorities, and increasing recognition of the need to operate the organizations in the sector on commercial principles. The need for reorganization was felt in view of the rapidly increasing demand to improve the functional performance of the industry and due to the resource constraint faced by the public sector enterprises, particularly by the SEBs, to invest in new projects. The main cause for lack of financial resources has been the lack of political will to increase the tariff to realistic levels. The subsidy and the cross-subsidies in the sector have led to a distorted consumption pattern and rapid growth of captive power plants. The essence of the reorganization has been to ensure financial viability of the organizations in the sector, provide better value to the customer, and attract private capital into the sector.

Reforms were initiated by the central government in 1991, when it introduced the policy to liberalize the sector and promote private investments in the sector. This policy focused initially on the generation side of the business. Its main objective was to add generation capacity in a short time frame through private capital by making the sector attractive for investments. Since then, a series of further measures have been initiated by the government to expand and refine the policy for the sector. Amendments were introduced in the Indian Electricity Act, 1910 and the Electricity (Supply) Act, 1948 to facilitate the process.

Developments in legislation on regulation

Central sector

The Indian Electricity Act, the Electricity (Supply) Act, and the Indian Electricity Rules provide the basic framework for the regulation of electricity industry in India. These are discussed in brief in Annex 1. These have been amended from time to time to reflect the policy changes and to make them suitable to the changing environment.

In 1996, the central government, along with the state governments, decided on the Common Minimum National Action Plan. The objectives of the plan were to initiate steps required to improve the performance of the sector at the central and state level in a time-bound manner. Setting up the CERC (Central Electricity Regulatory Commission) and the

SERCs (state electricity regulatory commissions) was a key element of this plan.

The central government passed the legislation enabling the setting up of independent and autonomous regulatory bodies at the central and the state levels in July 1998. This is a significant step towards restructuring the electricity industry in India and is expected to provide an environment conducive to the dynamic growth of the industry. The regulatory bodies are expected to promote competition, efficiency, and economy in consumption of electricity and in investments for the development of the sector.

This Act provides for the establishment of the CERC to regulate the tariff of the central generating companies and other generating companies in case of a composite scheme for generation and sale of electricity to two or more states and to regulate the interstate transmission of electricity undertaken by the PGCIL and other organizations, including the tariff payable to them.

The Act also makes provisions for the establishment of a state commission as an option (not as a mandate) to the state governments. The state government can establish such a state commission in terms of the Act for the purposes of determining the tariff/charges payable for the intrastate transmission and supply of electricity. The state commission will also regulate the working of the licensees and others involved in the electricity industry in the state. The functions of the CERC are outlined below.

- To regulate the tariff of generating companies owned or controlled by the central government.
- To regulate the tariff of generating companies other than those owned or controlled by the central government specified in Clause (a), if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one state.
- To regulate the interstate transmission of energy including tariff of the transmission utilities.
- To promote competition, efficiency, and economy in the activities of the electricity industry.
- To aid and advise the central government in the formulation of tariff policy which shall
  - be fair to the consumers
  - facilitate mobilization of adequate resources for the power sector
  - associate with the environmental regulatory agencies to develop appropriate policies and procedures for environmental regulation of the power sector

- arbitrate or adjudicate upon disputes involving generating companies or transmission utilities in regard to matters connected with the above-mentioned clauses
- frame guidelines in matters relating to electricity tariff
- aid and advise the central government on any other matter referred to the central commission by that government.

The enactment of the Regulatory Commissions Bill and the establishment of the CERC are positive steps. There are, however, a number of other measures, especially at the state level, which need to be initiated urgently to provide a comprehensive solution for restructuring the power sector. The Regulatory Commissions Bill has facilitated the setting up of state regulatory commissions and many states have indicated their willingness to set up the same. The states, however, also need to consider the option of enacting a reform bill to facilitate comprehensive reform, i.e., restructuring, unbundling, and corporatization of the vertically-integrated SEB and related aspects.

The other important issue relates to the phasing out of subsidy and cross-subsidy existing in the tariff structure of most of the SEBs. Clearly, this process would not be easy and will have to be graduated over a period of time. It would also require strong political will and commitment to the process of reforms.

State sector

In the recent months, a number of states have indicated their willingness to reform the power sector and to set up regulatory bodies. The main driving force to establish independent regulatory commissions is the need to rationalize consumer tariffs. The issue of rationalization of tariffs is linked to the inability of SEBs to pay for IPP (independent power producer) power. In such an environment, many states found that IPPs were simply not willing to invest as the projects seemed unviable.

Orissa

Orissa was the first state to initiate power sector reforms in the country with the enactment of the Orissa Electricity Reform Act in 1995. Significant progress has been achieved since then and the Orissa example has now become a precedent which many other states are following or are likely to follow. The OSEB (Orissa State Electricity Board) was dissolved and unbundled as part of the reform programme. The generation business has been hived off into two corporations, i.e., the OPGC (Orissa Power Generation Corporation) which took over the thermal plants of the erstwhile OSEB and the Orissa Hydro Power Corporation which took over the hydro plants. The transmission and the distribution businesses were entrusted to GRIDCO (Grid Corporation of Orissa Limited), which is the successor organization of the OSEB. The distribution business has been divided into four zones and is to be privatized by the end of financial year 1998/99.

Further, the OERC (Orissa Electricity Regulatory Commission) was established in 1996 as a part of the reform process. The powers and functions of the regulatory commission include issue of licences, enforcement of licences and regulation of licensees, promotion of economic efficiency and safety in transmission, distribution, and use, regulation of bulk supply and retail supply tariffs, collection of data and forecasting, and promotion of competition.

The OERC, since its inception, has issued licences for transmission and bulk supply, distribution and retail supply, and regulations for conduct of its proceedings and discharge of its functions. It has issued two tariff orders and its last tariff order was issued on 21 November 1998 for bulk supply and transmission tariff and retail supply and distribution tariff separately. It has issued orders giving consent for setting up captive power plants and for third-party sales. The future course of action of the OERC envisages approval of the grid and distribution code and formulating consumer grievance redressal machinery for the licensees. It is also working towards developing a regulatory MIS (management information system), issue of consumer rights statement, power system planning and security standards, operating standards, and holding of inquiry proceedings on the supply position in selected areas.

Orissa has followed the UK model in terms of unbundling of the generation, transmission, and distribution business. The approach has been to privatize the successor distribution and generation business at the earliest while the transmission business is to be privatized at a later stage. A number of states are likely to follow this model with Haryana and Andhra Pradesh having already enacted legislation on a similar pattern.

Haryana

The Haryana Electricity Reform Act was passed in 1998 and the Haryana Electricity Regulatory Commission was enacted according to the provisions contained therein on 17 August 1998. At the same time, the Haryana Electricity Board was unbundled and the generation, transmission, and distribution businesses were corporatized under separate activities. Two distribution zones were formed. It is proposed that the east zone would be privatized, with the government of Haryana retaining equity participation. An information dissemination programme has been launched relating to restructuring and reform activities.

Haryana has followed the Orissa model with secondary changes. The privatization of the distribution business at the first stage is limited to one of the two zones. This will provide an opportunity for comparison of performance of a private operator with the state owned utility. The programme is expected to proceed at a rapid pace when compared to Orissa and hence will provide useful comparison with performance in Orissa. Further, the socio-political environment in the state is significantly different from that in Orissa and successful implementation would not be easy and would require strong political will and adroit manoeuvring skills.

Gujarat

The Government of Gujarat initiated the reform programme in 1997. The principal components of the programme involved setting up an independent regulatory commission to restructure the GEB (Gujarat Electricity Board), modernize and upgrade the distribution system, and clear the backlog of connections for the agriculture sector. The state government notified the constitution of the Gujarat Electricity Regulatory Commission in November 1998 and the selection committee for selection of members has also been constituted.

The constitution of the Gujarat Electricity Regulatory Commission has been notified under the Regulatory Commissions Bill and the process of selection of the chairman and members of the commission is already under way. This process, however, will not provide a mechanism for restructuring the GEB. The state is thus considering separate state legislation providing for a comprehensive reform programme.

Andhra Pradesh

Well on its way towards reform, the Andhra Pradesh legislative assembly passed the Andhra Pradesh Electricity Reform Bill on 28 April 1998. Presidential assent has been received for the same. The government would now notify a date from which the new Act would come into effect, paving the way for the formation of an independent and statutory three-member power regulatory commission. The restructuring programme involves reorganization of the APSEB (Andhra Pradesh State

Electricity Board) into two corporations under the Companies Act, India namely the APGENCO, having the generation business of the state, and APTRANSCO, having the transmission and the distribution business. APTRANSCO would be in the business of purchase of electricity from various sources, transmission, and supply of electricity. It will procure power from APGENCO, APGPCL, central generating stations, neighbouring states, and IPPs, and will supply it to distribution companies.

The state has also drawn out a detailed timetable for reforms. After the notification of the Reform Act in January 1999, the state now plans to unbundle and corporatize the generation, transmission, and distribution businesses. Distribution is proposed to be separated into three different companies. The privatization of the distribution companies has been scheduled for the end of the year 2000.

Andhra Pradesh has followed the Orissa model and the first phase of the reform programme is about to be completed. It is expected that the progress will be rapid as compared to Orissa as the state has, in the recent past, demonstrated strong political will to improve the infrastructure and to attract private investment into various sectors of the economy.

Other states

A number of other states including Rajasthan, Karnataka, Tamil Nadu, Madhya Pradesh, and West Bengal are in the process of setting up state regulatory commissions and restructuring the power sector. West Bengal is reportedly following a significantly different structure whereby all the distribution in the rural areas is handed over by the board to a new organization called the State Rural Electrification Development Corporation. This organization is expected to be structured as rural cooperatives buying power from the SEBs and managing their affairs at a local level. A number of different structures and variations within structures are being undertaken in different states.

arket ucture

Supply side

The electricity industry in India has traditionally been owned and operated by government organizations. The MoP is the primary body responsible for the development of electrical energy in the country. Under the central government, there are several agencies and power generating and transmission entities that function under the administrative guidance of the MoP.

The construction and operation of generation projects in the central sector are entrusted to central sector power corporations, namely the NTPC, the NHPC, and NEEPCO

(North Eastern Electric Power Corporation). The NPC (Nuclear Power Corporation), under the administrative control of the Department of Atomic Energy, is responsible for the nuclear power plants.

The PGCIL is responsible for all the existing and future transmission projects in the central sector and also for the formation of the National Power Grid. The PFC provides term finance to projects in the power sector. The REC, under the MoP, funds programmes of rural electrification.

The responsibility of generation, transmission, and distribution of electricity in the states is entrusted to the SEBs and state electricity departments. Most of these are vertically-integrated utilities under the direct control of the State Ministry of Power or Department of Power. The SEBs were established in various states pursuant to a mandate contained in Section 5 of the Electricity (Supply) Act, 1948. There are 17 SEBs in operation and they generate over 70% of the electricity supplied in the country. Apart from generating, transmitting, and distributing power, SEBs are also responsible for fixing tariffs and collecting dues from the consumers. The Electricity (Supply) Act, 1948 envisaged the SEBs as economic and efficient organizations operating on quasi-commercial principles.

Private utilities form the smallest part of the power sector in India and their role till the beginning of the reform programme was confined to specific areas of small jurisdiction and consumer base. The private sector organizations in the power sector have performed consistently well. They have generally been profit-generating organizations and are now regarded as role models for the new companies entering the sector. The major players in the private sector have been the BSES Limited, which distributes electricity in Mumbai, Maharashtra; CESC Limited in Calcutta, West Bengal; Tata Electric Company Mumbai, Maharashtra; Ahmedabad Electric Company, Ahmedabad, Gujarat; and Surat Electric Company, Surat, Gujarat.

Demand side

The consumption of electricity in India has experienced a rapid growth during the 1990s. The growth has been consistently over 8% during this period, recording a growth of 8.5% in 1995/96. However, the growth rate increased at a somewhat lower rate during the past two years. The per capita consumption has increased from 253 kWh in 1990/91 to 335 kWh in 1995/96 at a CAGR (compound annual growth rate) of approximately six per cent. The number of consumers during the same period has grown from 82 million to

86 million. Most regions of the country continue to experience significant shortages with peak deficit being 11% and energy shortage being 8% during the last year.

Industry has traditionally been the single largest consumer of electricity in the country accounting for more than one-third of the total consumption last year. The share of industry in electricity consumption came down from 62% in 1980 to about 38% in 1995/96 despite high industrial growth. This is because the SEBs have, over the years, artificially inflated agricultural sales by including part of the commercial losses as sales in this category. This is reflected in the consumption of the agricultural sector increasing from 12% to approximately 31%. This has been possible because of lack of proper metering for this segment of consumers.

Drivers for regulatory reform and change in market structure

The functioning of the industry has been characterized by the inability to achieve need-based growth, and problems of operational, technical, and financial instability, which include high T&D losses, low PLF, poor finances of the SEBs, etc.

Economic and financial

Lack of financial resources with both the central and the state governments to take up need-based programmes for addition of generating capacity and development of T&D systems has led to the recognition of the fact that the development of the sector cannot be undertaken without the participation of private capital. The key aim is to make the environment attractive for investments by the domestic and the foreign private sector.

The widening gap between demand and supply has put the government under pressure to open up the sector and simplify the procedures and processes for approval of projects.

Political and managerial

The functioning of most of the SEBs has traditionally been characterized by extensive political interference. This constrained the managerial and functional autonomy of the SEB administration, often leading to decisions which were not based on commercial considerations. A number of social policy goals such as employment and price stability have often been interrelated to the government policies on the development of the sector.

Further, the electricity tariffs in most states are highly distorted with an element of cross-subsidy built into the tariff structure. The industrial consumers are supplied power at high tension and pay more than the domestic and agricultural consumers who are supplied at low tension. This is leading to an increase in captive power units which could eventually deteriorate further the already poor financial condition of the respective boards.

Technical and operational

The operational performance of the plants run by the SEBs has not been at par. The level of T&D loss is in most of the states is very high in comparison to international standards. This problem is often linked to the lack of financial resources and political interference in the functioning of SEBs.

Availability of reliable and quality power when demanded by the consumers has been lacking. The reform process has recognized the need for renovation and modernization of old plants and introduction of new and better technologies in the sector.

Restructuring of the sector and market development in the future

Since the early 1990s, it was clearly evident that fundamental structural reforms were needed to improve the performance of the electricity industry and to meet the rapidly growing demand. Reforms in the sector essentially focus on three issues (1) restructuring to improve efficiency of operation, (2) regulatory reform, and (3) competition and privatization. The reasons for poor performance, however, have been complex and diverse. Similarly, there are significant differences with respect to the current state of development, level of performance, income distribution, and social concerns related to pricing and availability of electric power, legal and political systems, etc., in different states. Hence, it is not advisable to apply a one-size-fits-all approach which can severely limit the performance improvements that the reforms expect to achieve.

Various models of structuring the industry have been mooted and applied in various countries. Based on the degree of monopoly existing in the electricity sector around the world, the three generic models detailed here could be considered.

Monopoly at all levels

A single company has monopoly over generation, transmission, and distribution of electricity to final consumers. Generation is not subject to competition and the customer has no choice of supplier. The model prevailed almost universally until quite recently.

Competition in generation

There is competition in generation but all the sales must be to a designated purchasing agency.

Retail competition or direct access

Here the customers choose their supplier. More than one supplier offers to supply electricity to consumers in an area. There is open access to the T&D system. Distribution is separate from the retail activity, which is competitive.

There are many dimensions to the choice of industry structure and many different variations exist based on the characteristics of the individual country. In India, the restructuring of the electricity board would involve unbundling its functions, corporatization of its functions in one or more corporation, transfer of assets, liabilities, personnel from SEB to corporation(s), etc. There are several advantages associated with the unbundling of generation, transmission, and distribution business. These include transparency and accountability in the performance of different functions, ensuring that all activities get a proper focus. Further, unbundling allows competition in the segments where it is likely to lead to an optimal solution or at least a benchmark comparison amongst the functioning of various units.

State electricity regulatory commissions - through notification or reform bill?

Since unbundling and corporatization involve complex technical and social changes, it is important that the restructuring exercise should have the legislative sanction as legislation carries the backing of elected representatives and hence public support. A legislative action is generally not open to challenge on grounds of mala fide and other similar grounds whereas an executive action can be.

With the enactment of the Electricity Regulatory Commissions Act, 1998, the state governments have two options for establishing the SERC. These are through a notification under the provisions of Section 17 of the Central Act or through a comprehensive state legislation with the requisite presidential assent.

Some state governments are reportedly choosing the first option as it precludes the need to go to the state legislature, refer the bill to the central government, etc. and may work out to be the quicker and easier method of establishing the SERC. However, this option has certain inherent drawbacks. First of all, the Central Act does not provide for restructuring of the electricity industry in the state, which should also be an integral part of a reform programme. If an SERC is set up through a notification, the state government will have powers to curtail its power or even demolish it at a later date through a simple notification without going to the state legislature. Further, political will and bureaucratic zeal will be important factors to ensure successful implementation of a reform programme. Thus, it is all the more desirable that the state government takes the initiative and owns the reform programme.

Role of the regulator

The establishment of an independent regulatory commission is one of the basic requirements of the reform programme. The regulatory functions of the SEB will then be transferred to the commission and the role of the state government will be restricted to issuing policy directives. The commission should have full financial autonomy and it will be required to act in the interests of all stakeholders including the regulated utilities, consumers, state, and others concerned with the development of the industry. The specific functions of the commission would include, among others, the following.

- To promote efficiency, economy, and safety in the use of the electricity in the state particularly in regard to quality, continuity, and reliability of service and enable all reasonable demands for electricity to be met.
- To regulate the purchase, distribution, supply, and utilization of electricity, the quality of the service, the tariff, and the charges payable keeping in view the interest of the consumer and the consideration that the supply and distribution cannot be maintained unless the charges for the electricity supplied are adequately levied and duly collected.
- To regulate the working of the licensees and to promote it in an efficient, economical, and equitable manner.
- To require licensees and others to formulate prospective plans and schemes in coordination with others for the promotion of generation, transmission, distribution, and supply of electricity.
- To regulate the assets, properties, and interest in properties concerning or related to the electricity industry in the state.
- To promote competition, competitiveness, economy, and efficiency, while ensuring a fair deal to the customers and entities engaged in business of generation, transmission, and supply of electricity.
- To promote efficient utilization and conservation of energy, appropriate demand-side management, reduction of wastes, and losses in the use of electricity.
- To advise the state government on matters concerning electricity generation, transmission, distribution, and supply in the state, as the commission considers appropriate.
- To adjudicate upon the disputes and differences between the licensees and to refer the matter for arbitration.

However, given the current status of market evolution, several issues have to be taken into account while ensuring autonomy, accountability, independence, and expertise available with the regulatory commission. Further, as the market structure evolves from being a SEB monopoly to competitive entities in the private sector, the regulatory authorities would need to demonstrate flexibility in approach. They will have to ensure that there are sufficient safeguards to protect the interests of the consumers and that the financial viability of the new entities is secure. They will encounter several implementation issues involving complex social, technical, legal, and economic issues in trying to achieve the stated objectives. They will hence need assistance on several fronts to ensure that they are able to meet the challenges set forth to them by a dynamic and evolving market.

In respect to the independence, autonomy, and accountability, the following guidelines provide the basic framework.

Independence

The regulatory authority should be provided full independence from political pressures – from ministries and from regulated enterprises, private or public. To ensure this

- the regulators should be appointed on the basis of professional rather than political criteria
- the regulators should be appointed for fixed terms and should have formal protection from arbitrary removal during their term
- their appointment process should involve both the executive and the legislature to ensure proper checks and balances
- they should not have been employed recently by the regulated utilities or other interest groups.

Further, there should be a cooling period between the end of their appointment and employment by parties with interest in the commission's decisions.

Autonomy

Autonomy would imply that the regulatory commission should have its own resources, based on its own funding sources (most common mode is through levies on regulated firms or the consumer of the regulated services), instead of relying on budgetary transfers. Further, regulators should have autonomy in staffing so that they can recruit staff with high levels of expertise. The tasks of the agency, not political considerations, should determine the size of the staff.

Achieving staffing autonomy in regulatory services often requires exempting them from civil service salary and recruitment rules. It might also mean recruiting external consultants as well.

Accountability

Accountability would entail transparency in the regulatory agency's decision-making process which requires the regulatory agency to publicly announce and invite suggestions regarding the initiation of a process to make policy decisions and to explain these decisions. The decisions of regulatory agencies should be open to judicial review. Accountability also requires clear simple procedural rules, which reduce possibilities of administrative delays; a multi-member commission, which reduces the possibility of abuse of power and sudden and dramatic changes in the policy with a change in the regulator; and defined rules and procedures for removal of regulators.

Tariff setting

Current rate policies

The current pricing method used by most utilities in the Indian electricity industry is the traditional cost-plus method. The regulatory mechanism for setting electricity tariffs is outlined in Schedule VI of the Electricity (Supply) Act, 1948. The cost-plus approach starts with the identification of costs which include the fixed costs related to capacity, the variable costs related to fuel, and other customer related costs. Then these costs are allocated as 'equitably' as possible among consumers through the tariff structure.

The guiding principles for retail tariffs are usually financial and social. Usually the policy makers would like the level of tariffs to be such that it meets certain financial criteria and the structure to be, in some sense, fair without penalizing certain groups arbitrarily. However, tariffs have evolved in an ad hoc manner in the past 30 years. Electricity tariffs have been used and are currently being used to meet several financial, political, and social objectives. The cumulative effect of such forces has created a complex web of tariffs in most states of India.

Typically, electricity prices in India are less than the cost of electricity production (average cost) and substantially less than the cost to build and operate a new power plant (marginal cost). During the financial year 1996/97 the average realization was about Rs 1.49/kWh while the cost of supply was about Rs 1.86/kWh. Compounding the problem of underpricing is the high level of T&D loss and poor collection rate from farmers and domestic consumers. Electricity prices are also low in India compared to utilities in a number of other Asian countries.

Underpricing of electricity is a serious issue in India's power sector. Underpricing encourages consumers to place little value on saving energy. In many states, electricity to the agricultural sector is not only underpriced but actually distributed free (for example, in the states of Punjab and Tamil Nadu). Most states follow a flat-rate tariff structure for their agricultural consumers where farmers are charged on the horsepower of their irrigation pumps and not on the actual electricity consumed. Subsidies for agriculture also create excess demand for electricity and disincentives for investments in conservation. More importantly, high demand makes power supplies unreliable, forcing consumers to maintain back-up generators, which results in macroeconomic distortions due to overcapitalization in the economy.

Problems with retail electricity pricing based on accounting costs also constrain efficiency investments for several reasons. Most customers pay for electricity based on total kilowatt-hour use over a certain period with no distinction between use in peak period (when electric power is expensive to supply) and off-peak period (when electric power is relatively cheap to supply). This lack of price signals discourages load management actions. Second, with the exception of large industrial customers, most customers do not pay for poor power factor. Poor power factor leads to increased T&D losses, thereby raising the cost of power delivered.

Any analysis of power tariffs should consider both the structure of tariffs and the costing methodology for rate-making. In the electricity economics literature, it is fairly well established that accounting costs are not relevant for resource allocation. One reason for this is that the accountant is concerned with recovering sunk costs, whereas for efficient resource allocation, it is the actual resource used or saved by consumer decisions that are important. Prices are the amounts paid for extra consumption, and need to be related to the incremental costs in meeting extra consumption. The accounting framework for tariff setting fails to capture this important principle. The estimate by the traditional approach may lead to over-investment and waste or under-investment and unnecessary scarcity.

Objectives of the pricing policy

The demand for electric power in India is growing at a rapid pace and the objectives of economic growth require that the pricing policy should promote economically efficient allocation of resources, both within the energy sector and between it and the rest of the economy. At the same time, however, every citizen's basic right to be supplied with a certain minimum amount of energy needs to be recognized. Recent studies in some of the states have demonstrated the willingness and ability of consumers, including agricultural and domestic, to pay for efficient and reliable power at rates significantly higher than those currently being charged. There is a need to reduce and gradually phase out the subsidies over a period of time, while at the same time improving the quality of supply.

Further, the pricing policy should ensure financial viability, autonomy, and speedy development of the energy sector. In India, this aspect has often been overlooked to provide subsidized power to agricultural and residential sectors. The utilities cannot function in vacuum, and tariffs have to be correlated to the quality of power supplied with incentives and penalties awarded for achieving the requisite standards and vice versa. The introduction of the performance-based tariff structure is expected to provide incentives to the utilities to improve the quality of supply and services provided by them.

On the consumption side, energy pricing is a very important tool for demand management, especially in the long run. Incentives for maintaining high power factor and for conservation during peak hours and seasons are required. Provision to impose penalties on those indulging in theft and violating the load control measures and adoption of proper incentives for metered supply should be a part of a pricing policy.

Finally, there are additional objectives such as the need for price stability, the need for simplicity in energy pricing structures, promoting regional development or specific sectors, and other socio-political, legal, and environmental parameters that need to be kept in mind. Thus, a large number of complex issues need to be addressed and apparently contradictory objectives have to be reconciled while designing an appropriate pricing policy. In India, the absence of reliable data and lack of infrastructure to implement innovative tariff structures further complicate the matter. Some progress has however been achieved with the initiation of reforms in Orissa and it is expected that as the liberalization of the sector gathers momentum these constraints will be removed.

Efficiency pricing: the case for marginal costs

The rationale for using marginal costs is the maximization of economic efficiency and social benefits. Pricing below marginal cost results in wasted resources because the cost of producing some units exceeds their value to consumers. Use of the marginal cost methodology promotes better utilization of capacity and avoids unnecessary investments to meet peak demands, which tend to grow very rapidly. The marginal cost approach permits the structuring of prices so that they vary according to the marginal cost of serving demands – by different consumer categories, at different times of the day, in different seasons, in different voltages, and so on.

The marginal cost approach is the basis for determining the fair price of energy provided by a new generator. Assuming that the inflation impact exceeds the cost-reducing impact of technological development, which is usually the case for most mature technologies, the embedded cost (of other generators already in production) is unlikely to provide sufficient financial incentive for new investments to come online. Hence, there is a need for adopting a marginal cost based PPA (power purchase agreement) for all new generators.

Moving towards LRMC (long-run marginal cost) tariffs in the retail segment will be the key to improving electricity efficiency. This is, however, easier said than done. There are several practical problems related to applying the marginal cost based approach in India. Traditional price regulation as carried out in India has been a socio-political exercise. It is unlikely that any government would allow the huge rate 'shocks', which moving towards LRMC tariffs would entail. Further, the revenue derived from charging marginal costs may differ significantly from the amount required to meet the financial needs of the licensee. This could either place the financial viability of the licensee in jeopardy or bestow on it a significant windfall, unless the regulatory commission intervenes to correct the discrepancy. The data requirements for adopting the marginal cost approach are more comprehensive and complex than those required for using the accounting costs. The kind of data required is generally not available with most SEBs and the MISs are either non-existent or are not geared to meet these requirements. Hence, as a first step, the marginal cost approach may be used only as a 'comparator' to provide signals to the regulator and the consumers.

Performance-based regulation

Performance-based rate-making strives to eliminate some of the control aspects of regulation and replace them with a system of incentives and penalties. The prices in such a system are generally fixed for a longer period than that in the cost-plus methodology. The PBR (performance-based regulation) system has distinct advantage in terms of providing an incentive to the utility to minimize the costs. This incentive however needs to be counter balanced by monitoring the prescribed quality standards so that the reductions in cost do not lead to a reduction in the supply standards. There are several mechanisms and parameters such as the generating plant reliability, T&D loss, outages at the customer level, customer complaint handling and satisfaction, etc., around which a PBR system can be designed. Most SEBs in the country are characterized by the lack of a proper MIS and reliable data to design a good PBR system. Hence, in the Indian context, at the outset only simple and easily measurable or quantifiable parameters should be included in the PBR system.

Transition strategy

The pace of reforms, especially the tariff rationalization process, will not be easy and is not possible in the short term. It will be constrained by several socio-economic factors from capability and willingness of consumers to pay for high cost power to a possible outcry and revolt against the incumbent regime. Political will is an important issue and will play an important role in determining the ultimate success of the tariff reform process on which the success of the reform programme will hinge. The following steps need to be initiated urgently to respond to the issue of rationalizing the tariff structure.

Establishing regulatory structure

Setting up a regulatory commission quickly is an essential task which needs to be undertaken by all states. The periodic revision of tariffs is a major problem as it has traditionally been a political decision. Many states in the recent past have dragged their feet for a long time over the issue, which has led to the deteriorating financial health of the SEBs. Setting up a regulatory agency to do the job would delink the government from what is considered to be an unpopular decision. The regulatory authority will take over this responsibility and set tariffs that achieve the twin objectives of ensuring financial viability of the entities in the sector and at the same time insulating small and marginal consumers from price shock.

Sensitizing public representatives

The political leadership all over the country has been extremely sensitive on the issue of subsidies and has strongly held the view that any tinkering with the subsidies would be politically damaging. The public representatives need to be sensitized to the fact that further continuance of subsidies would be disastrous to the development of the sector. Further, through the process of reforms, it is possible for the government to delink itself from taking unpopular decisions by setting up regulatory agencies to do the job.

Consumer education

Consumers in India have been the most neglected in the state-owned and -operated infrastructure sector. There are not many organized forums where an aggrieved consumer can voice complaints. Providing better quality of service and protecting the interest of consumers are key elements of the reform programme. At the same time, it is critically important for the people in the country to recognize that subsidies have resulted in a substantial loss to the SEBs and to the economy as a whole. A vigorous campaign to educate the people about the financial crisis of the SEBs and to make them realize that further development of the sector is not possible without availability of sufficient resources with SEBs, needs to be launched. A part of the exercise of consumer education and awareness will have to be carried out by the regulatory commission. At the same time, a movement will have to be initiated to educate consumers on their rights, collect and disseminate information on the regulatory decisions and their impact on different consumer categories, and spread awareness on the quality standards and mechanisms available for handling consumer complaints.

Graduating tariff shock

In spite of the improvement in the general economic environment and income levels, a substantial portion of the country cannot afford electricity services. The regulators will need a mechanism which ensures that low-income consumers do not lose access to electricity while raising prices to marginal cost. This apparent paradox can be solved in two ways. The classical solution will be to pay direct person-oriented subsidies to poor consumers and raise power prices instead of obliging utilities to reduce prices below costs and then shouldering the debt, as is the current practice in India and several developing countries. This method, however, is clearly impractical and an alternative could be to preserve low prices for the level of consumption prevailing before reform and raise prices at the margin. Consumers would then pay flat rates for current consumption levels, but prices would rise steeply if demand, especially the demand for higher (peak) capacity but not for longer utilization hours of the same capacity, were to increase. This would provide the right pricing signals for load growth.

Pacing of reforms and strategies for future action

There are different approaches to implementing the reform programme. There is a 'big bang' approach where unbundling, privatization, and introduction of competition are achieved in a single step. The other approach is a phased reform process where a relatively long transitional period is available to the utilities and the regulatory bodies to evolve according to a structured programme. The adoption of a particular approach would depend on factors such as the existing capacity of the legal, political, and social systems, performance standard of the existing infrastructure, complexity involved in implementing the big bang approach, the time required to evolve effective regulatory structure, and political will.

In India, the restructuring of the SEBs may be attempted in a phased manner to avoid the shock associated with a major changeover. This will ensure that sufficient time is available for regulatory bodies to start functioning effectively and will also provide sufficient time to convince all stakeholders of the benefits associated with the process.

As a first step, the activities of the SEB should be broken into separate divisions, which operate on commercial principles or as separate profit centres. This step is relatively easy to accomplish as it does not require any legislative action and does not mean shifting or reallocation of the staff. The activities can be divided into separate divisions based on the functional role, i.e., the generation, transmission, and distribution business should operate as separate divisions. It is possible to further subdivide the divisions – the generation business can be divisionalized based on the nature of the plants, i.e., thermal, hydro, non-conventional, etc., and the distribution business can be divisionalized on geographical lines into zones of manageable size.

The divisions should operate as separate profit centres and must be provided with full financial autonomy and functional independence. The dealings between the divisions should be on commercial principles and they should maintain separate books of accounts. These steps would identify clearly the performance of each of the divisions and highlight to the management the need for support, attention, and improvement at different places. The process of divisionalization would facilitate the eventual unbundling into separate companies.

The misconception that the reform programme ipso facto means either transfer of ownership to the private sector or privatization needs to be removed. Privatization is not an absolute necessity or mandate of the reform programme. Though privatization is one of the important vehicles for achieving the objectives, it does not mean that restructuring of the sector cannot be achieved without privatization.

At the same time there are several advantages linked with private sector participation in the sector. A private sector organization creates hard budget constraints, sets high performance standards, and depoliticizes the sector. It will ensure availability of the much-needed financial resources for development of the sector and also bring in skills available in the private sector. The GoI has already allowed the participation of the private sector in generation, transmission, and distribution businesses. A number of IPPs have already come on line and progress on several others is being made. The activity that needs increased penetration of the private sector is distribution.

The various models for private sector participation in distribution that can be considered are

- joint venture
- outright sale of assets to a private company
- public offering or flotation
- leasing/franchise/long-term concession, etc., of business to private sector
- management contract with private sector
- subcontracting part of the business or a small area of supply to cooperatives
- assigning a part of the distribution work, namely billing and recovery of money, maintenance of meters, and maintenance of small supply lines.

The joint venture model adopted has several advantages that are enumerated below.

- The state government will retain some say in the utility and can step in if the utility abandons or fails to perform. This is necessary as electricity supply is a public utility service and cannot be discontinued at any time. The risk of a private sector not performing can also be avoided. In the joint venture model, the state entity can be given control of the utility in case of non-performance by the private sector.
- Political and public perception discourages outright sale, lease, or disposal of public sector units.
- Employees' opposition to joint venture is less as compared to outright sale, lease, or disposal.

The disadvantages linked with other options are outlined below.

- The staff problem.
- Difficult to identify the assets to be sold in the absence of an inventory.
- A substantial amount may have to be invested by a private person to purchase the assets.
- Public offering or flotation can be done only for the whole corporation, i.e., the successor of the SEB. It cannot be

done for any particular division. This option, therefore, assumes that the entire successor company will vest with one participant. This may not be, therefore, feasible.

- A long-term lease franchise or a long-term concession will also have the same problem as mentioned in the case of an outright sale.
- The management contract does not give the participant an effective control over the employees.

In the context of the pacing of reforms, the following issues are important.

Experience sharing

The reform process in Orissa was initiated more than three years ago and since then substantial progress has been achieved in establishing the regulatory structure in unbundling the SEB and in moving towards privatization. There are several states that are likely to follow the Orissa model. It is important that the experience gained in Orissa is available to these states to ensure that the process is smoother and faster than that in Orissa.

The actual process in each of the states would be influenced by the circumstances in each of the states, the level of economic development, the political will, and the path adopted for restructuring the sector.

Confidence building among the management and labour

In the reorganization of any industry, the issues relating to transfer of employees are very delicate and at the same time of great significance. It is important to adopt a correct legal and pragmatic practical approach to deal with these issues.

Restructuring is often equated with retrenchment among the labour. The labour unions need to be reassured and training and skills imparted so as to make them more useful in the new environment. The engineers often feel that with privatization, further expansion of the SEBs would stop and their promotion avenues would decline. However, they need to be convinced that liberalization would bring in a much-improved scenario in terms of job prospects in the private sector and better emoluments.

The new environment will also require the regulated utilities to make several changes in their operations to come up to the expectations of the regulatory commission. They have limited institutional capacity and skills available to them to meet sophisticated data requirements and to successfully present their case. Understanding and appreciation of the new system will take some time and persuasion to make them aware of the benefits that will flow from the process. This will ensure the cooperation of the utilities, which will be vital to ensure the viability of the reform programme.

The new regulatory environment will demand new skills and expertise, which most managers (mostly engineers) do not possess today. Training and upgrading of skills will be one of the key issues to be dealt with in the SEBs in the context of regulatory reforms. This will ensure that the people do not lose motivation and are not made redundant by the new environment. Specialized cells dealing with regulatory affairs with expertise in technical, economic, legal, and accounting fields will need to be set up.

In this regard, it is important that the terms and conditions of service on the transfer should not be in any way less favourable than those which have been applicable to them under the current structure. Further, all benefits rendered before the effective date of transfer should be recognized and the period of service should be considered as continuous for the purpose of service benefit.

Research in regulatory issues

The restructuring exercise will throw up a large number of issues which will need insight and research from the perspective of different stakeholders. These inputs will be required at three levels (1) regulatory commissions, (2) regulated utilities, and (3) consumers. Debate and analysis of these issues and dissemination of information and findings will be important to ensure that the process is not hijacked by interest groups and that all objectives of the reform programme are achieved as envisaged.

Summary

The fields of regulation and regulatory economics are still under evolution in India. There are several questions and issues that need to be debated and analysed in this context. It will be critical to ensure autonomy, accountability, transparency, expertise, and credibility of the new regulatory regime if the process of regulatory reforms is to succeed. Further, a clear understanding and working relationship between the state government and the SERC and also between the CERC and the SERCs will need to be established.

Though the reform programme has been initiated in many states, the pace and the direction are still not clear. Some of the states are likely to follow the Orissa example while others may set up the regulatory commission under the Electricity

Regulatory Commissions Act, 1998. Political will is an issue which will play an important role in determining the ultimate success of the reform programme. Even where regulatory commissions are set up, the pace of reforms, especially the tariff rationalization process, will not be easy and is likely to extend over several years.

Annex 1

Brief description of legislation guiding the power sector

The Indian Electricity Act, 1910

The Indian Electricity Act, 1910 (hereafter, the 1910 Act) was passed by the Legislative Council on 18 March 1910 and came into force with effect from 1 January 1911. It deals with the supply and use of electricity and is applicable to the whole of India except the state of Jammu and Kashmir. The 1910 Act deals with the grant of licences to persons who wish to engage in the business of supply or transmission of energy and also for approval to non-licensees to undertake transmission, supply, and use of energy. The 1910 Act is in five parts. Part I deals with the preliminaries including definitions. Part II deals with the grant of licences for supply of energy and matters related thereto including the performance and functioning of the licensees. Part II A deals with licensing of transmission. Part III deals with the supply, transmission, and use of energy by non-licensees. Part IV deals with general matters including those concerning the use of electricity by institutions such as railways, aerodromes, the constitution of advisory boards, etc.

The Electricity (Supply) Act, 1948

After Independence, the Government of India enacted the Electricity (Supply) Act, 1948 (hereafter, the 1948 Act), which came into force on 10 September 1948. The 1948 Act came into force to provide for the rationalization of the production and supply of electricity and for taking measures conducive to electrical development.

The 1948 Act aimed to ensure coordinated development of electricity in India on a regional basis. The government felt that this was a matter of increasing importance for post-war reconstruction and development. Further, it was also felt that the absence of a coordinated system, in which generation is concentrated in the most efficient units and bulk supply of energy centralized under the direction and control of one authority, was another reason that was impeding the healthy and economical growth of electrical development in the country. It was also apparent that if the benefits of electricity are to be extended to semi-urban and rural areas in the most efficient and economical manner consistent with the needs of an entire region, the area of development must transcend the geographical limits of a municipality, a cantonment board, or a notified area committee, as the case may be.

It was therefore necessary that the appropriate governments should be vested with the necessary legislative powers to link together under one control electrical development in contiguous areas by the establishment of what is generally known as the 'grid system'. It was under these circumstances that the 1948 Act passed to facilitate the establishment of this system in newly licensed areas and to control the operations of existing licensees so as to secure fully coordinated development.

The government felt that it is not possible to legislate for this purpose within the framework of the 1910 Act, which was conceived for a very different purpose. Thus, on the broad lines of the Electricity (Supply) Act, 1926 in force in the United Kingdom, an appropriate legislation which will enable provincial governments to set up suitable organizations to work out 'grid schemes' within the territorial limits of the province was enacted.

The 1948 Act is divided into seven chapters and has nine schedules. Chapter I deals with the preliminaries including definitions. Chapter II deals with the constitution and functions of the CEA (Central Electricity Authority). Chapter III deals with the SEBs. Chapter IV deals with the powers and duties of the SEBs. Chapter V deals with the working and trading, etc., of the SEBs. Chapter VI deals with the SEBs' functions, accounts, and audit. Chapter VII deals with the miscellaneous provisions.

The SEBs came to be established in various states pursuant to a mandate contained in Section 5 of the 1948 Act. The CEA was constituted to develop sound, adequate, and uniform national power policies to coordinate the activities of planning agencies in relation to the control and utilization of national power resources.

The Indian Electricity Rules, 1956

The Indian Electricity Rules, 1956 were issued in the exercise of the power under the 1910 Act (Section 37) providing for procedural aspects such as obtaining of licences and for matters such as the general safety requirements, the general conditions relating to the supply and use of electricity and matters connected with the electric supply lines, overhead lines, electric traction, etc.

Amendments in the 1910 Act and the 1948 Act

The 1910 Act and the 1948 Act were amended from time to time to take care of the changing circumstances and requirements. The principal amendments have been the 1956, 1959, and 1991 amendments.

1956 Amendment

Section 57 of the 1948 Act was amended. The amended Section 57 provided for calculation of licensee's charges to customers in accordance with the provisions of Schedule VI to 1948 Act. Schedule VI provided in detail the financial principles and their application in calculating the licensee's charges. The intention has been to give a reasonable rate of return to the licensee but at the same time to ensure that if there is a windfall, a substantial part of the excess amount is ploughed back to the benefit of the consumers and upgradation of the system.

1959 Amendment

The 1910 Act was amended to make provisions relating to consumer benefits, exercise stricter control over licensees, provide for inspection of electric works, and installation of the central government.

1991 Amendment

In 1991 (pursuant to the liberalized economic policies of the government) the 1910 Act and the 1948 Act were amended by the introduction of significant changes. These included a provision for the grant of supply licence for an enhanced period under the 1910 Act (30 + 20 years) and the introduction of the concept of the generating company as distinct from the licensee and the board. The object of these amendments was to provide for greater participation of the private sector in the generation of electricity and also to make supply licences attractive by enhancing the duration of the licences. In the meantime the industrial policy was also changed to allow private enterprises in generation and distribution of electricity.

Annex 2

Issues to be highlighted for discussion at the conference

Session 1: Regulatory framework

- How to ensure independence, autonomy, and accountability of the regulatory commissions especially since there are no precedents and given the fact that the regulatory decisions have wide ranging implications?
- Is sufficient expertise available with regulatory commissions to analyse available information? How can they be assisted to ensure efficient and reliable functioning?
- What would be the role of the government under the new regulatory framework and how to ensure that the regulatory decisions are not usurped?
- With the enactment of the Electricity Regulatory Commissions Act, 1998 the state governments have two options for establishing the SERC (state electricity regulatory commission) – through the Central Act or by enacting a separate legislation. The pros and cons of each need to be analysed and debated.
- What would be the role of the CEA (Central Electricity Authority) under the new environment? To what extent does the role of CERC (Central Electricity Regulatory Commission) overlap with that of the CEA? How to ensure that the policies are consistent?
- What are the possible areas of overlap between the CERC and the SERCs? What happens in case of inconsistency or conflict between the CERC and the SERC?
- How to minimize delays in regulatory decisions?
- What could be a measure of performance of regulatory commissions?

Session 2: Market structure

- In the Orissa model, the generation business is not a licensed activity as it is supposed to be a competitive business. However, as a competitive environment is yet to truly emerge in the Indian scenario and most of the regions continue to suffer significant shortages, there is a possibility of the generators exercising monopoly power. As the power purchase costs account for more than 60% of the total input costs, an issue which needs to be debated and analysed is whether the generation business should also be under the direct control of regulatory commission. With the constitution of CERC, the tariff for central sector plants owned by the National Thermal Power Corporation, National Hydro Power Corporation, and for the IPPs (independent power producers) supplying power to more than one state would be regulated. However, other plants with almost similar technical and operational characteristics

Electricity Reform and Regulation: Some Issues

Independent regulation is new in India. Public opinion has to recognise its value. It will do so when it sees results in terms of improved quality, availability and, in due course, reduced tariffs. Ultimately the independence of regulators can only be guaranteed by strong public opinion. While legislation will help, it is important that the financial and human resources for regulatory commissions are kept out of the scope of government approval.

S L Rao

Of the total electricity generation capacity in 1998-99, 30.4 per cent is with the central government and central government owned enterprises, 61.1 per cent with the state governments and 8.5 per cent with the private sector. Coal is the overwhelmingly used fuel for 62.1 per cent of electricity generated, and hydro generation accounts for 24.1 per cent. The rest is gas, oil and nuclear. Domestic consumption between 1993-94 and 1997-98 went from 18.17 per cent to 20.54 per cent; industry declined from 39.6 per cent 'to 35.5 per cent; while agriculture went from 29.7 per cent to 30.5 per cent; and commercial enterprises went from 5.9 per cent to 6.5 per cent. The overall gap in cost recovery in the industry has gone up from 17.8 per cent in 1992-93 to 21.2 per cent in 1998-99. This is largely due to average sectorwise tariff in paise per KWH which varied in 1998-99 from as low as 29.7 paise for agriculture, 131.1 paise for domestic consumers, 297.5 for industry, 345.3 for commercial establishments and 398.9 for the railways. Industry and railways are shifting away from SEBs to captive or other supply sources. Captive generation capacity with industry, some of which is connected to the grid was about 20 per cent of grid connected capacity. Transmission, and distribution losses have been reported at 22 per cent but are known to be much higher especially in distribution. In Delhi it is estimated to be about 50 per cent; in Karnataka 19 per cent, Andhra Pradesh over 33 per cent; and similarly in many other states. As regulators have begun to scrutinise the figures, the losses have been revised upwards: for example, Karnataka has raised T and D losses from 19 per cent to 40 per cent. Beyond technical losses, the losses are due to theft. The lack of metering especially of agricultural supply has enabled the concealing of losses under the heading of cheap agricultural supplies. It keeps rising as regulators scrutinise the data. That is because the data are bad, many times doctored. Billing and collection are unsatisfactory, with large-scale unmetered supply to the extent of 50 per cent. The utilisation of generating plants in India measured by the plant load factor (plf) varies from as low as 20 per cent to as high as 91 per cent. While peak shortages were 13.9 per cent in 1998-99, there are times of the year when surplus electricity totalling over 2,000 MW could not be utilised because of transmission constraints. SEB accounts are not up-to-date, and are poorly maintained. Many do not have asset registers and cannot identify and value their assets. At the last power ministers' conference it was stated that SEBs have, apart from all other outstanding due payments, unfunded provident fund dues to their employees of Rs 40,000 crore.

Apart from the commercial problems, quality of electricity is poor. Frequency over last year was at times as low as 47.8 Hz in south India and 53.5 Hz in east India. Voltage fluctuated between 280 kV and 435 kV in the 400 kV system in east India. Variations in other parts of India were not much different.

The power generated by central generating stations is allocated between the different states that had earlier asked for the creation of those plants. New private generating projects have 'take or pay' conditions with the state governments with whom they have agreements for purchase.

The extent of cross-subsidisation of domestic and agricultural customers by industry, railways and commercial establishments has increased. As a consequence, many of them have shifted to captive generation, moving resources away from their core businesses to producing power. The financial condition of almost 65 per cent of the electricity industry including almost all of distribution and supply, accounted for by the SEBs, has also made the electricity supplied vary widely in frequency and voltage, apart from non-supply for extended periods.

Regulatory Commissions

It is in this context of an electricity industry that is not generating a surplus for investment, that independent regulation was introduced in India. The first state commission was created in 1996, the central commission in 1998 and other state commissions have come later. The central commission regulates electricity tariffs and transmission up to the boundaries of any of the states. All tariffs for generation, transmission, distribution, as well as for purchase and supply within a state are regulated by the state commissions concerned.

The central commission also has powers to license private investment in transmission. However, the operation of interstate transmission is a monopoly of the central transmission utility which is owned and controlled by the central government.

Of the regulatory commissions that have been established, Orissa is four years old. CERC is almost two years old. All the others have been established within the last 18 months. Being altogether new to India, their effectiveness requires a great deal of learning by all concerned, governments, regulated entities, media, public and the regulators themselves. Governments have been tardy in providing office space, staff, financial powers, etc, to regulatory commissions, often because of their own procedural bottlenecks. In some states they have delayed in handing over tariff setting responsibilities and continued determining tariffs after the establishment of the commissions. In some others the full membership of the commission was not appointed for long. In a majority of commissions, members and chairmen have experience in government. Some judges have been appointed. There are very few people from outside government and the judiciary. This may be because of the poor levels of remuneration and perquisites even compared to other government servants and the preference to appoint people from government. The Punjab government for instance has barred non-government people from being appointed.

There is lack of consistency in the approach to regulatory responsibilities over the country – between states, and between the CERC and the states. The Forum of Indian Regulators was an initiative to enable interactions and sharing of experiences. But there is no way yet to ensure coordinated approaches to electricity. Its nature is such that it requires standardisation and coordination. For example even though electricity is in severe short supply and industries in most states are charged very high tariffs for power from the grid, the approach to captive generation has varied between states. In one state it is proposed to freely permit new captive generation and connection to the grid. In another state, captive generation has been frozen and a substantial charge is levied even when the captive generation is not connected to the grid. It has become an additional source of revenue for the concerned resource-depleted electricity distribution company.

The availability based tariff structure is designed to improve grid discipline. At present the structure applies to interstate transmission. It consists of a two-part tariff structure, along with a frequency linked charge. It is expected to enable improvement in electricity quality, encourage trading within transmission constraints, and progressively match load to generation. It does not apply within any state since that has to be a decision of the state commission.

Many states have yet to set about formulating their electricity grid codes. When they do so, the codes must seamlessly match the national code, but this cannot at present be laid down. The present laws do not provide for it. If the proposed unified electricity legislation is passed, some of these inconsistencies might be removed or at least reduced.

There are some murmurs about 'regulatory uncertainty'. It is not quite clear what is meant by the term. It is said that this is mainly at the state level. Perhaps the issue relates to the basic approach of putting tough caps on tariff increases with a view towards improving efficiencies and reducing T and D losses. If so, the commissions are doing their job and the uncertainty relates to performance of the utilities, not to their regulation.

Metering has been a target for some commissions. In others governments have been made to hold back special concessions that they were about to grant. In due course we can expect to see the commissions beginning to get involved in more sensitive subjects like agricultural tariffs and cross subsidisation. The reluctance of the commissions to allow the tariff increases asked for may upset regulated entities, but if reasons have been given, this cannot be seen as making for uncertainty.

There could be a legitimate complaint about 'regulatory uncertainty' when regulatory commissions keep changing their approaches to tariff regulation and other matters from time to time. This does not seem to be the case. Every regulatory commission has come out or is coming out with their approach papers on tariffs. Clearly these approach papers will enunciate alternatives. These could be different from existing practice. The floating of these alternatives might cause some uncertainty. That kind of uncertainty is due to the transition to independent regulation, and is hence unavoidable. It will get resolved as soon as the commissions announce the principles and the terms and conditions on which they will regulate tariffs. This process takes time, given the need for transparency. For example, the CERC released its consultation paper on bulk tariffs – incidentally the first of its kind ever done in this country – in July 1999. The paper has been widely circulated, and discussed by the commission in the five corners of India. Arising out of this paper the commission initiated expert studies on cost of capital and depreciation norms. It also had CEA up date its 1992 draft notification on technical and operational norms. These have been discussed with a group of experts and at the Central Advisory Committee. They have been widely circulated and comments have been called for. Hearings will be held at which everybody will have a chance to be heard. After the hearings the commission will come out with its paper on its principles of tariff fixation. This process has taken a year. It may not be completed till June 2000 or so. In the interim period the commission has passed orders on around 50 provisional tariff applications. These provisional tariff applications will be converted into final orders once the principles have been decided.

Another comment that is beginning to surface is that regulatory commissions are too judicial and legalistic in their procedures. It must be remembered that there are higher courts of appeal against the orders of regulatory commissions. Obviously no regulatory commission would like to see its orders overruled by higher courts. One of the essential requirements to ensure this is that 'due process' is followed. This involves the submission of petitions, adequate opportunity for all interested parties to study and respond to those petitions, and adequate opportunity to the petitioners to file rejoinders to the responses. The process also demands that the information used in the final order was available to all parties during the hearing. If these are legalistic proceedings, they are unavoidable, given the nature of the process which is subject to appeal.

What regulatory commissions are trying to do, is to be as flexible as possible while ensuring that the required legal process is followed.

CERC has two types of jurisdiction; one is regulatory and the other is adjudicatory. In the former, the proceedings may not be adversarial but might sometimes involve many parties. A suggestion that the CERC is now actively considering is that in complex matters, CERC might go through a two-stage process, with a further hearing at the second stage of a draft order arising out the hearing at the first stage. This will give everybody concerned an opportunity to comment on the direction in which the commission's mind is moving. However, adjudicatory proceedings are, by their nature, adversarial, and in such cases the normal procedures of one-shot hearing, with an order at the end, will necessarily have to be followed.

Reform Initiatives

The reform initiatives in electricity in India have so far consisted in the following:

- opening out generation to private investment;
- subsequently transmission and distribution were also opened to private investment;
- creation of central and state regulatory commissions;
- privatisation of distribution; and
- mega power projects.

The opening up to private investment has had little impact in the case of generation, and none in the case of transmission. Distribution privatisation has taken place only in Orissa. The deficit in relation to the costs of SEBs has widened considerably during the decade. Attempts made to build confidence in investors about the ability of SEBs to pay for the power purchased by them have lead to various initiatives, such as sovereign government guarantees, and escrow. Recently there have been suggestions about the securitisation of dues to central generating stations, which could free some escrow capability. None of these deals with the real problem. Indeed escrow itself is an unfortunate concept, mortgaging as it does, future cash flows, primarily from the better customers, when present cash flows are inadequate. It will make the future worse than the present.

The electricity industry has suffered from neglect by the social sciences – economics, management, accountancy, law. As a result, most personnel among regulatory commission staff have come primarily from state electricity boards, CEA, and other branches of government. That has skewed the quality of the staff support to regulators, and will reflect on their work. There is yet no initiative in India to develop multi-disciplinary studies, research, training and education in electricity. For example there are few lawyers who have specialised in electricity jurisprudence. SEBs who appear before CERC are usually represented by their engineers who have had little or no training in presenting arguments. They come without adequate authority and inadequate preparation. The central PSUs are also taking time to understand how to present themselves. This leads them to over dependence on lawyers and consequently extended hearings and long arguments on legal points and not enough on techno-economic considerations. Training for personnel from regulated entities on how to approach and present to regulators is an urgent requirement.

Load despatch centres in the states are part of the SEBs so that the regulator of load despatch is the same as the entity who is generator and distributor. At the centre, the responsibility for grid operations at the interstate levels rests with the government-owned transmission monopoly and is not independent of any commercial interest. The regulator has no direct say on this. CERC has ordered the ring fencing of the load despatch function which is with the central government-owned public enterprise, Powergrid, that has the responsibility in the case of interstate transmission.

Private Investment in Transmission, Distribution and Supply

Private investment in transmission is at present possible if Powergrid wants it, at the interstate level. Within the states there is still no mention of private investment in transmission. At the interstate level, private investment has yet to come through though it is two years since it was enabled. This may be more likely in a more transparent environment where the prospective investor can choose in competition which lines he wants to invest in.

Powergrid has to find huge resources if transmission constraints are to be removed within a reasonable period. But it is also investing considerable sums (over Rs 1,800 crore at present) of its limited resources into telecommunications. This makes it imperative that private investment is encouraged to come into transmission. But Powergrid at present is able to pick and choose the lines it wants to invest in and to give the leftovers for private investment. This has to change so that proper conditions can be created that enable private investment to come in. Another possibility was to transfer the new telecommunications business to another company under strictly defined terms and conditions so that the transmission company could concentrate on expanding the transmission network. In any case the customer is paying through tariffs for the capital costs of transmission. He must benefit from any use of the transmission infrastructure for any other purposes.

The privatisation of distribution has yet to take off. In Orissa where it has happened, a state-owned and a statewide distribution monopoly has now been replaced by private companies which are monopolies in more limited geographical areas. In the restructuring of distribution we must separate distribution from supply, so that the former can remain a wires monopoly, used by many competing suppliers.

Regulatory commissions are expected to promote competition, but their powers are primarily for the regulation and determination of tariffs. So they can at best simulate the effects of competition. They can regulate competition when they have the power to regulate entry of new entrants, which means licensing new investments in generation, transmission and supply.

Even trading in electricity between states is not possible today because every transaction has to get the approval each time of the supplying state and the buying state. Similarly, the law does not provide for competing suppliers to the same customer.

Hopefully, the new unified electricity law will resolve these anomalies and enable regulatory commissions to perform their tasks effectively and comprehensively by enabling them to regulate not only tariffs but also entry and exit.

The electricity regulatory mechanisms in India at present are primarily about the detailed regulation and determination of tariffs. This is done by prescribing rates of return and allowing costs, along with some performance incentives. In the case of CERC these have been for central government-owned companies. Tariffs of private enterprises generating electricity are mainly with the state governments, since there are as yet no private projects engaged in interstate trading, which would be regulated by the CERC.

Immediate Tasks for Regulators

The immediate tasks of regulators in India are:

- the improvement of discipline in the grid and hence the quality of power;
- introduction of performance based regulation in the determination of tariffs;
- stimulation of trading so as to match local surpluses with demands over the system; and
- promotion of investment in the sector.

In the states, the regulators have to

- improve technical and commercial efficiencies in transmission and distribution;
- make cost and ROR based tariffs completely transparent; and
- separate distribution from supply and open the latter to new entrants.

The regulators in India continue largely to regulate government-owned and controlled entities. These entities have for long been accustomed to an intimate relationship with the representatives of the owners who were also regulators of the system. One result was that the operating companies and boards were able to get policy initiatives and tariffs which suited their purposes. With the coming of the regulators and the commencement of transparent regulation with an opportunity for all to be heard, many of them might resent the regulators and try to reduce their powers. They might prefer that the regulatory commissions work to principles laid down by government. Even private entities would rather have guaranteed returns as provided for in schedule six of the 1948 Act than returns set by the regulator. The laws have to be applied in a few cases before the practices get settled and state-owned enterprises recognise the fairness and consistency of independent regulation.

Next three years: We must expect that within the next three to five years,

- regulators will be regulating mostly government-owned entities;
- tariff regulation will be in detail, but there will be a consistent approach to tariffs over the country;
- we will be able to differentiate between tariffs at peak times and off-peak times;
- there will be significant improvements in electricity quality;
- that private investment in transmission will have been initiated;
- distribution companies at the state level will improve their revenue collections and hence show an improved ability to pay their bills;
- transmission constraints will be reduced;
- power flows across the system will improve;
- trading would have started in a limited way across the country; and
- at least large customers will benefit from competing suppliers.

Next 10 years: Over the next five to 10 years,

- regulators should be aiming to move out of detailed determination of generation tariffs into regulating markets and trading;
- regulators should be also regulating entry and exit of generators, and into transmission and supply;
- regulatory commissions would be increasingly involved in considering alternative fuel sources;
- encourage the use of renewable resources; and
- begin to take decisions on issues relating to convergence.

Expanded Role for Regulation

As regulators move from simulating competition to regulating markets for competitors, their ability to regulate a wider range of tasks will increase and we should expect them to regulate energy rather than electricity. There is merit in the idea that electricity regulation should be combined in due course with coal and petro products tariffs. At the same time, the growing role of private investors with new or privatised projects will make for differences in the regulator's task. Government-owned entities will continue but not be as important in the system as they are today. As a result, compliance might improve. The judicial system will have got more used to regulatory commissions and permit them their own space, especially as jurisdictional issues get clarified.

Some of the legislative lacunae might be corrected with the passing of the Electricity Bill 2000, now under discussion before being presented to parliament. Independent regulation in India is new. Public opinion has to recognise its value. It will do so when it sees results in terms of improved quality, availability and, in due course, reduced tariffs. Ultimately, regulators have to be accountable to public opinion. Their independence can only be guaranteed by strong public opinion. While legislation will help, it is important that financial and human resources for regulatory commissions should be kept out of the scope of government approval. This new institution must be helped to be effective speedily. EPW

from Oxford

India: An Archaeological History
Palaeolithic Beginnings to Early Historic Foundations
Dilip K. Chakrabarti
0195645731 1999
215 x 140 mm 390 pp. Rs 545

Eight Lectures on India's Economic Reforms
T.N. Srinivasan
[Oxford India Paperbacks]
0195652827 2000
215 x 140 mm 108 pp. Rs 150

Indira Gandhi, the 'Emergency', and Indian Democracy
P.N. Dhar
0195648994 2000
215 x 140 mm 438 pp. Rs 545

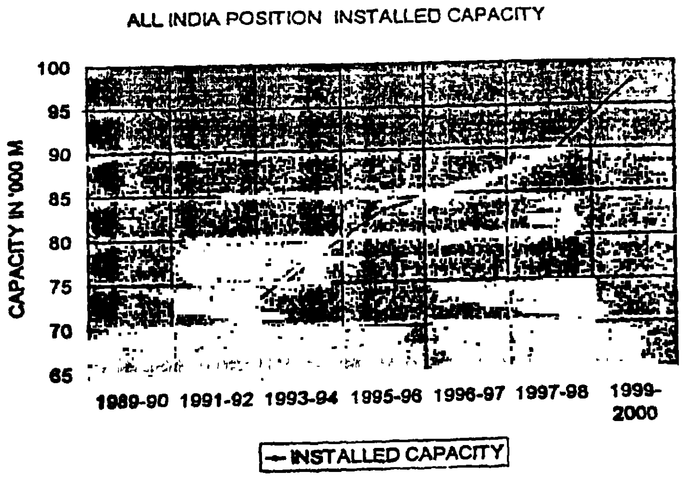
OXFORD
UNIVERSITY PRESS

• Calcutta: Plot No.A1-5, Block GP, Sector V, Salt Lake Electronics Complex, Calcutta 700091
• Delhi: 2/11 Ansari Road, Daryaganj, New Delhi 110002
• Chennai: Oxford House, 219 Anna Salai, Chennai 600006
• Mumbai: Oxford House, Apollo Bunder, Mumbai 400001

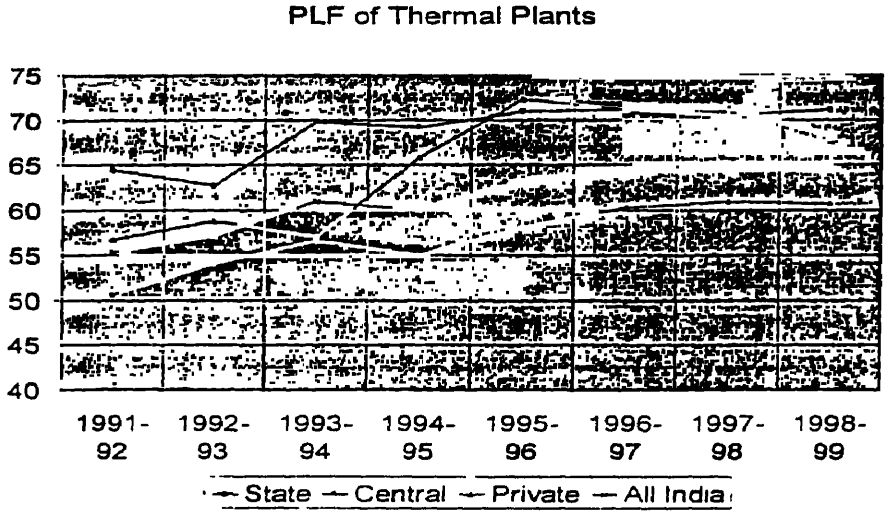
Outline of Presentation

- Developments in power sector
- Major problems
- Outline of reform measures
- Present status
- Benefits of regulation
- Limitations of regulation
- Issues for Discussion

Growth in installed capacity



Improvements in PLF



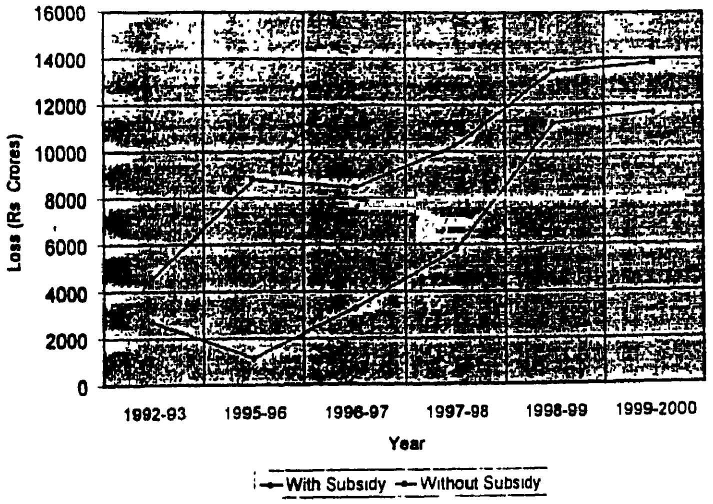
Shortage of Electricity

1999-2000

- Peak Deficit - 12.4%
- Energy Deficit - 6.2%

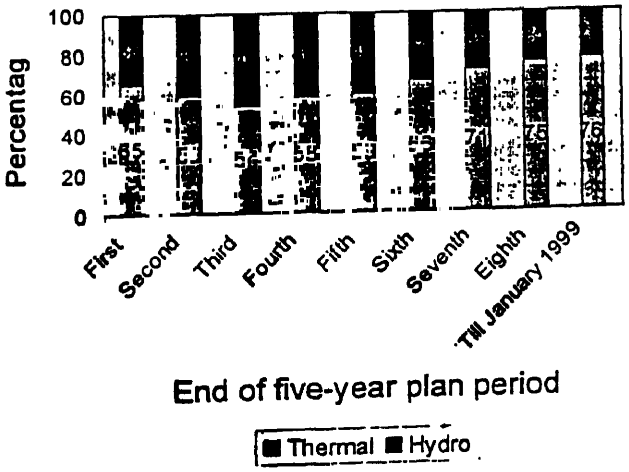
Financial deterioration

teri



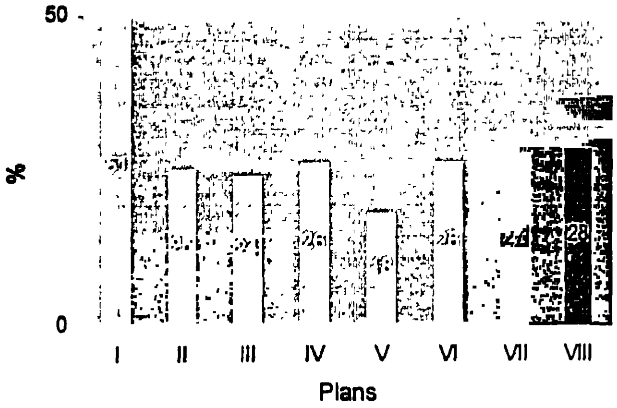
Imbalance in capacity

teri



Imbalance in investment

T&D Share in Power Sector Plan Outlay



Imbalance in tariff
Regulatory Response

Tariffs for agricultural consumers pre and post reforms

Category	Existing Tariff	Approved Tariff (for 2000-01)	Remarks
	Flat Rate Tariff (Rs/HP/Year)		
Maharashtra			
Upto 3HP	0		
Upto 5 HP	500	900	Proposed category-upto 5HP
>5 HP upto 7 5 HP	750	1100	
>7 5 HP upto 10HP	1000	1400	
Andhra Pradesh (Non DPAP Areas)			
Upto 3 HP	150	250	
>3HP upto 5HP	250	400	
>5HP upto 10 HP	350	500	
>10 HP	400	600	
Uttar Pradesh (PTW)			
	480		
Upto 10 HP		660	
>10 HP		720	

Transmission & Distribution Loss

U.P.	41.5%
Karnataka	38.0%
Andhra Pradesh	35.4%
Maharashtra	29.0%
Orissa	42.0%
All India	23.0%

(as per Planning Commission)

Outline of reforms

- Changes made in 1991-92
- Need for deeper reforms
- Reforms in Orissa
- Reforms in Haryana
- Reforms at the Centre

Present status of reforms

- Privatisation of distribution only in Orissa
- Regulatory Commission established in U.P., Haryana, Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, Orissa, Andhra Pradesh, Karnataka, Tamilnadu, Delhi, Arunachal Pradesh, West Bengal.
- Tariff orders issued in Orissa, Maharashtra, Andhra Pradesh, U.P.
- Tariff Orders awaited in Gujarat
- Availability based tariff issued and stayed by CERC.

Benefits of regulation

- Regulatory risk is perceived to be lower than political risk associated with Government.
- Independent regulators can take tough political decisions needed to improve financial health.
- Professional decision making can help to improve operational efficiency and customer satisfaction.
- Greater transparency can mobilise public opinion in the right direction.

Limitations of regulation

- Problems in regulating public sector monopoly - lack of profit motive.
- Relationship with judiciary
- Inadequate capacity and experience in regulation of industry
- Dependence on Government for policy decision, staffing and funds.

Issues for discussion

- Need to prioritize areas of action.
- Privatization and competition in distribution
- Reduction of T&D losses.
- Agricultural tariff.
- Improving inter-regional links.

Orissa Electricity
Regulatory
Commission,
Bhubaneswar

D K Roy

Basic issues of regulation in the Indian power sector

Transition to a liberalized environment: experiences and issues in regulation 104–113

Power sector restructuring has received enormous attention during the last three years. The formation of an independent regulatory commission has been the cornerstone of the restructuring exercise. Despite the resistance of political groups, bureaucracy, and various sectors of society to any institutional change, there has been remarkable progress in the establishment of electricity regulatory commissions. Orissa took the lead in establishing a commission on 1 August 1996, and was followed recently by the setting up of the CERC (Central Electricity Regulatory Commission) and the Haryana Electricity Regulatory Commission. Before the end of 1998/99, the Government of India expects to have nearly 10 state commissions in place.

The establishment of an independent regulatory commission, functional unbundling, and the break-up of vertically-integrated SEBs (state electricity boards) have been at the core of the reform programme. The terminal illness of the SEBs has precipitated the need for urgent reform to rebuild the electricity industry which can be efficient, attract private capital, protect consumers, and advance the goals of public policy. The government, not in a position to provide funds, has decided to explore avenues for participation of private sector entrepreneurs in the electricity industry. While faced with the failure to provide funds and sustain the utility, the government cannot simply withdraw from ownership and management and leave the industry to the vagaries of the market. Instead, it is obliged to make alternative arrangements to maintain an improved system, to meet the growing demand of electricity, and to provide safe, reliable, and economic power supply. It is, however, difficult to develop a regulatory framework that is capable of providing both stability and responsiveness to changing circumstances. An appropriate regulatory framework depends on what purposes are sought to be achieved and how much change can be effected in a given situation. The government needs to be sensitive about things that can go wrong with the process. It can lose sight of the difference between form and substance. The government needs to have a clear perception of the goals of reform and accordingly design a regulatory framework which can achieve these goals while providing adequate support for the restructuring and reorientation of the utility during the transitional period. In the Indian context, the goals may be exemplified with reference to the OERC (Orissa Electricity Regulatory Commission) as this is characteristic of the reform perspective in the states and the centre.

The objectives as incorporated in the preamble of the Orissa Electricity Reform Act, 1995 are as follows.

> *An Act to provide for the restructuring of the electricity industry for the rationalization of the generation, transmission, distribution and supply of electricity. For avenues for participation of private sector entrepreneurs in the electricity industry and generally for taking measures conducive to the development and management of the electricity industry in the state in an efficient, economic and competitive manner including the constitution of an Electricity Regulatory Commission for the state and for matters connected therewith or incidental thereto.*

The objectives in the Electricity Regulatory Commissions Act, 1998 are as follows.

> *An Act to provide for the establishment of a Central Electricity Regulatory Commission and State Electricity Regulatory Commissions, rationalization of electricity tariff, transparent policies regarding subsidies, promotion of efficient and environmentally benign policies and matters connected therewith or incidental thereto.*

There is a need to look behind the stated objectives to understand that the main rationale for reform is to address serious financial problems, technical inefficiencies, and looming power shortages. It is of interest to note the difference in the objectives and functions as incorporated in the Orissa Act and the Central Act. The Orissa Act explicitly provides for restructuring of the electricity industry. The Central Act is silent on this aspect and focuses on rationalization of tariff. While the Central Act does not expressly envisage restructuring of the industry, the Orissa Act is silent on environmental commitments. Further, the Orissa Act provides for limited commitment with regard to 'the interest of consumers' as this stipulation occurs (Section 26[2] of the Act) only with regard to the determination of tariff, whereas the state commissions under the Central Act may be mandated to ensure a fair deal to the customers while promoting competitiveness and making avenues for participation of the private sector in the electricity industry (vide Section 22[2][b] of the Act).

Obfuscation in spelling out the goals results in the ambivalent attitude of government functionaries who write the rules of the game and who are supposed to provide the support and facilitation for the new institution to take root and function in a meaningful way. Lack of clear and unambiguous objectives leaves much scope for the commissions to have their own interpretation of the aims and objectives.

The commission can be viewed differently by different authorities and interest groups, and the regulatory framework can vary from state to state on important issues. The decisions of the commission can cause frequent litigation if the objectives and functions are not clearly spelt out. The Government of India may look to the commissions only for fixing cost-based tariff without political and social pressures. The World Bank and the consultants may tend to view regulation only as an economic and technical question, and the state government may view it merely as an unavoidable institution to attract funds from the World Bank, other multilateral funding agencies, and private investors. The government has genuine difficulty in selling a comprehensive reform programme to the people who have long been used to state funding and state assistance for provision of essential services and public goods, including electricity. Hence, it is understandable that restructuring and privatization needs are to be understated in the reform programme. But as indicated earlier, unclear objectives are likely to result in designing an inappropriate regulation.

Having taken steps in the right direction for a liberalized and pragmatic policy in the best interests of economic development and the public, the government has to build a legally good, morally enforceable, and independent regulatory framework that ensures public accountability and rational decision-making. Regulation obviously cannot be just an economic and technical question, it is a political and social issue as well. Any regulatory framework which does not take into account the impact of its interface with the political executives, the civil service, the operators in the government and private sectors, the employees of the SEBs and government companies, and the various sectors of consumers, will be unable to function smoothly and achieve its objectives. The choice of market structure in a reformed power sector must reflect current technical, political, and social realities as well as long-term aspirations of the industry.

The National Economic Research Associates has identified a comprehensive set of criteria, outlined below, against which the restructuring model may be measured.

- Commercial viability
- Financial viability
- Efficiency
- Optimization of the system
- Operational feasibility
- Legal feasibility
- Reduction in corruption
- Consumer protection
- Acceptability to stakeholders

This set of criteria is equally applicable in Orissa and Haryana, and is also likely to be suitable for other states.

It is necessary to emphasize that restructuring is a unique experience. The model of one country cannot be routinely replicated in another. The temptation to heavily depend on international experiences, particularly those of the US and the UK, should be avoided in restructuring and regulation even though the best practices of these countries may be adopted. Many talk glibly of deregulation, customer choice, and unbundling of distribution and supply in the light of experiments in the UK and the US. This may be inappropriate in the context of the current social, economic, and industrial situation in India.

The industry is swinging between stable state ownership and complete laissez-faire, pointing to the need for the creation of a regulatory equilibrium. The command and control regime of state ownership obviously provides imperfect regulation where rates are set by the government with disastrous consequences on the industry. It will be even more disastrous to go to the other extreme of an imperfect market. The US which has been enjoying/experiencing regulatory equilibrium for decades is now witnessing a movement to the right. We cannot afford to rely on current US experience and experiment with it in the Indian context. Competition acts as a force for innovation, productivity, and progress. It is not, however, the objective in itself. The objective is finding the most effective route to the desired result – an equitable society, more efficient allocation of economic resources, and a more productive Indian electrical system. At this point of economic history in India, our limited objective should be to arrive at a regulatory equilibrium.

As the electricity industry in India has to be transformed to take advantage of globalization in terms of technology, funds, and competition, the regulatory commissions will have to play a crucial role and be designed and equipped accordingly. The legislation should provide for the establishment of the commission, mechanism of tariff fixation, supervision and control of quality of service, method and manner of enforcement of obligation of utilities, and dispute resolution mechanism. As observed by T L Sankar, Principal, Administrative Staff College of India, it is advisable to carry out the restructuring with an authorization under a legislation so that the challenge to various aspects of restructuring is minimized.

Tariff is only the tip of the iceberg and hence a commission entrusted only with tariff fixation will be unable to achieve the goals of transforming the industry to an economic and efficient entity. The commission must have the powers to issue licences and monitor performance in all aspects, albeit in a hands-off and quasi-judicial manner. While the OERC has been given significant powers, some states plan to entrust the commission with the task of tariff fixation only, with the licensing power to be given at the discretion of the state government. This half-hearted approach to reform is not likely to succeed. To quote Bernard Tenebaum, formerly of the US Federal Energy Regulatory Commission, 'Power sector reform will succeed only when governments reform both the sector and the way it is regulated.' He lists the following as the prime responsibilities of the electricity regulator.

- Issue and enforce licences and concessions
- Set prices when there is no competition
- Monitor financial viability of operators
- Set service standards and monitor compliance
- Arbitrate disputes between operators
- Arbitrate disputes between operators and consumers
- Provide information and advice to the ministry

The regulatory commission is expected to usher in a totally new era in form and content of the electricity industry. For that to happen, the commission has to be perceived as independent of the government machinery and designed with the principle of good governance. Further, the four key principles of good governance criteria as identified by the Asian Development Bank, namely accountability, transparency, predictability, and participation, may be adopted for designing the regulatory framework.

The foremost criterion for the credibility of the commission is autonomy from governmental control and supervision.

This has been accepted in principle but there are deeply entrenched vested interests, archaic rules, and lack of understanding and commitment in the governmental machinery which, unless tackled, will erode the credibility of the commission and hamper it from acting without fear and favour. The selection process of the commissioners, the terms of appointment, and their accountability, etc., have been more or less taken into account in the laws passed so far. But one or two soft points may be dealt with here. In the CERC, the CEA (Central Electricity Authority) chairman, who is a part of the government, has been included as an ex officio member. In the Rajasthan Bill, the commissioner's term is three years with eligibility for reappointment. This is likely to impinge on the objectivity of the members as there may be temptation to ingratiate the government or conversely, hesitation to take a decision unpalatable to the government.

While governments have the power to issue policy directives, the law must specify that such policy directives must be consistent with the aims, objectives, and provisions of the Act. Disputes between the government and the commission are referable to the CERC in case of the Karnataka Bill, and retired judges in case of the Rajasthan and Andhra Pradesh Bills. Such a provision is apparently an improvement on the Orissa Act.

Important issues affecting the independence of the commission are funding, staffing, accounting, and administrative interface with the state government. Merely providing for the expenditure to be charged to the consolidated fund of the state does not confer financial autonomy. This only precludes legislators from voting on the budget of the commission. But the control of the administrative ministry and finance department of the state government may seriously affect the autonomy and efficiency of the commission. It needs no emphasis that the government can effectively control the commission through allotment of funds, issue of sanction orders, procedures for spending, drawing of bills, accounting and auditing, etc. The commission should be given the autonomy to adopt its own procedure for expenditure, accounting, and audit within the overall funds allotted to it for the year. It should be directly accountable to the Accountant General in financial discipline and not be fettered by executive interference once the funds are allotted.

Transparency has to be the hallmark of regulatory procedure and decision-making. The methodology adopted by the OERC consists of the following.

- Elaborate regulations have been notified on conduct of its business proceedings.

- Hearings are open to all.
- Proceeding on important issues such as licence, tariff fixation, tariff amendments, etc., are advertised in newspapers.
- Decisions are taken collectively by the three commissioners.
- Access is allowed to all interested persons to the procedures, orders, decisions, and policies.

Accountability holds public officials responsible for delivering particular outputs. The measures adopted by the OERC for its own accountability are as follows.

- All orders are passed in writing with elaborate reasoning.
- Certified copies of orders are issued to enable affected parties to file appeals in the high court.
- An annual report of activities is submitted to the government for placing in the legislature.

The regulatory commission can be effective and acceptable only by enlisting participation of stakeholders and the public. Steps taken by the OERC in this direction are as follows.

- A CAC (Central Advisory Committee) with representation from all sectors of stakeholders including those from industry, consumers' representatives, and employees of utilities has been formed.
- The CAC meets once in three months with the agenda circulated in advance.
- The CAC is consulted on important issues such as fixation of tariff, consumer service, and performance standards.
- Consultation papers are issued and views solicited on important issues such as tariff.
- In the formal hearings, intervention and participation is allowed to interested parties.
- Seminars, meetings, and informal hearings are held to obtain views of stakeholders and professionals.

The element of predictability emerges out of stable, open, and well-understood rules, where policies and procedures are transparent and accountable. In Orissa, this predictability came about through explicit design – issue of standards, practice directions, and guidelines.

Tariff regulation is the most crucial instrument in the hands of regulators. The regulatory framework has to incorporate a tariff formula which meets with the pricing objectives of the regulation. The basic models are rate base / rate of return which is the most widely prevalent, performance-based or incentive which has been adopted in the US in recent years, This has been accepted in principle but there are deeply entrenched vested interests, archaic rules, and lack of understanding and commitment in the governmental machinery which, unless tackled, will erode the credibility of the commission and hamper it from acting without fear and favour. The selection process of the commissioners, the terms of appointment, and their accountability, etc., have been more or less taken into account in the laws passed so far. But one or two soft points may be dealt with here. In the CERC, the CEA (Central Electricity Authority) chairman, who is a part of the government, has been included as an ex officio member. In the Rajasthan Bill, the commissioner's term is three years with eligibility for reappointment. This is likely to impinge on the objectivity of the members as there may be temptation to ingratiate the government or conversely, hesitation to take a decision unpalatable to the government.

While governments have the power to issue policy directives, the law must specify that such policy directives must be consistent with the aims, objectives, and provisions of the Act. Disputes between the government and the commission are referable to the CERC in case of the Karnataka Bill, and retired judges in case of the Rajasthan and Andhra Pradesh Bills. Such a provision is apparently an improvement on the Orissa Act.

Important issues affecting the independence of the commission are funding, staffing, accounting, and administrative interface with the state government. Merely providing for the expenditure to be charged to the consolidated fund of the state does not confer financial autonomy. This only precludes legislators from voting on the budget of the commission. But the control of the administrative ministry and finance department of the state government may seriously affect the autonomy and efficiency of the commission. It needs no emphasis that the government can effectively control the commission through allotment of funds, issue of sanction orders, procedures for spending, drawing of bills, accounting and auditing, etc. The commission should be given the autonomy to adopt its own procedure for expenditure, accounting, and audit within the overall funds allotted to it for the year. It should be directly accountable to the Accountant General in financial discipline and not be fettered by executive interference once the funds are allotted.

Transparency has to be the hallmark of regulatory procedure and decision-making. The methodology adopted by the OERC consists of the following.

- Elaborate regulations have been notified on conduct of its business proceedings.

- Hearings are open to all.
- Proceeding on important issues such as licence, tariff fixation, tariff amendments, etc., are advertised in newspapers.
- Decisions are taken collectively by the three commissioners.
- Access is allowed to all interested persons to the procedures, orders, decisions, and policies.

Accountability holds public officials responsible for delivering particular outputs. The measures adopted by the OERC for its own accountability are as follows.

- All orders are passed in writing with elaborate reasoning.
- Certified copies of orders are issued to enable affected parties to file appeals in the high court.
- An annual report of activities is submitted to the government for placing in the legislature.

The regulatory commission can be effective and acceptable only by enlisting participation of stakeholders and the public. Steps taken by the OERC in this direction are as follows.

- A CAC (Central Advisory Committee) with representation from all sectors of stakeholders including those from industry, consumers' representatives, and employees of utilities has been formed.
- The CAC meets once in three months with the agenda circulated in advance.
- The CAC is consulted on important issues such as fixation of tariff, consumer service, and performance standards.
- Consultation papers are issued and views solicited on important issues such as tariff.
- In the formal hearings, intervention and participation is allowed to interested parties.
- Seminars, meetings, and informal hearings are held to obtain views of stakeholders and professionals.

The element of predictability emerges out of stable, open, and well-understood rules, where policies and procedures are transparent and accountable. In Orissa, this predictability came about through explicit design – issue of standards, practice directions, and guidelines.

Tariff regulation is the most crucial instrument in the hands of regulators. The regulatory framework has to incorporate a tariff formula which meets with the pricing objectives of the regulation. The basic models are rate base / rate of return which is the most widely prevalent, performance-based or incentive which has been adopted in the US in recent years, and price cap which has been adopted in the UK. But regulators also adopt a mixed formula or an ad hoc method. Each formula has its advantages as well as drawbacks. Investors want certainty and high profits. The government wants the utility to aid the expansion of economy, and also wants it to charge the lowest price possible. Customers want the best possible service for the lowest possible price. The regulator has to balance these pressures mainly through tariff regulation.

Under the Electricity (Supply) Act, 1948, the licensees were obliged to determine the tariff for supply strictly in accordance with the Sixth Schedule which provided that the charges for sale of electricity should be so determined that clear profit shall not exceed the amount of reasonable return which was pegged approximately at five per cent over the bank rate. The Sixth Schedule gives a precise and elaborate method of calculating capital cost, clear profit, and reasonable return. The Orissa Act authorizes the commission to depart from any of the factors specified in the Sixth Schedule. The Central Act stipulates that the Sixth Schedule shall be one of the factors to guide the state commission in fixing tariff for supply of electricity.

The rate of return formula ingrained in the Sixth Schedule assures a reasonable return to investors and hence is comforting to them. But the formula as such cannot be acceptable to consumers as it does not give a guarantee even for a basic level of service. If the formula is applied without any conditionality, the cost of inefficiency has to be passed on to the consumers; efficient operators can have no incentive; and special appropriation provision has been kept in the discretionary realm.

In keeping with the reform agenda, the Sixth Schedule or any mechanical formula is no more mandatory. The rate of return calculation can only be a benchmark for the regulators to determine tariff. It is necessary to adopt a mixed approach combining the features from the rate of return, price cap, and performance-based mechanism. The OERC has adopted the mixed approach of combining targeted incentives with the rate of return regulation. In the regulatory design adopted by the OERC, tariff has been determined within the rate of return bandwidth to motivate the licensee to reduce cost, improve consumer service, and reduce transmission and distribution losses. It appears that though the commission has not been able to provide an incentive due to the absence of adequate profit, it has given enough of a signal in this direction. The tariff guideline for the state commissions as incorporated in Section 29(c) of the Electricity Regulatory Commissions Act, 1998 includes the desirable factors such as tariff reflecting cost of supply, improving level of efficiency, economic use of resources, etc.

Flexibility provided to the commissions in the reform legislation of the centre and the states in tariff determination will enable them to evolve appropriate tariff design for the licence in a pragmatic manner balancing the interests of all stakeholders. As the commission will have to function with independence and transparency, the investors should have no apprehension. The OERC has enhanced transparency by wide consultation and the issuance of a tariff policy paper to deal with issues that were raised by various stakeholders and professionals. The policy paper is to be revised at reasonable intervals. In the restructured and reformed environment, regulation should focus on process and quality of decision-making rather than on mechanical application of formulas. Regardless of which criterion is selected, what is really important is that the rate system should be based on technical concepts to make it impervious to political manipulation. Prices can be based on marginal costs or standard costs. In Chile, the choice was marginal costs for generation, standard costs for distribution, and a mix of marginal and standard costs for transmission wheeling charges. The regulator in India has to adopt an appropriate pricing mechanism.

It is considered relevant to deal with two important issues that will have considerable impact on implementation of tariff regulation.

The first is the commitment, objectivity, and professional competence of the regulators. Proper selection, desirable terms of appointment, proper orientation, and training for regulatory commissioners need more than a routine approach due to three main reasons.

1 Absence of similar institutions and relevant precedents
2 Inbuilt resistance of the bureaucracy to part with discretionary powers in favour of regulators
3 Likely indifference of state governments to provide adequate support and autonomy to regulators

The other issue is 'subsidy'. To quote David Matin Roodman from his treatise *The Natural Wealth of Nations*

> ***Few public policies are as unpopular in theory and popular in practice as subsidies. The very word can make economists shudder and tax payers fume, turn the poor into cynics and enrage environmentalists.***

Subsidies have been an integral part of tariff setting in the electricity sector. Reforms cannot wish away this element. During the transitional period, till the government-owned utilities are able to realize cost and reasonable returns, the government will have to provide subsidies for the poor; specific sectors in keeping with the financial, industrial, and agricultural policies; and other public purposes such as maintenance and extension of electricity in rural areas. The commission is required to set tariffs for various categories, mainly on cost of supply. While doing so, it may be expected to accommodate some cross-subsidy as long as it does not impinge on equity and undue discrimination. But if any particular category of consumers has to be charged less than the cost of supply due to public policy considerations, the state must provide funds to the service provider if it cannot adopt the more economically desirable method of giving direct subsidy to the targeted consumer group. If the state does not make the funds available on time, the credibility of the regulatory commission will be eroded and the utility's financial health would be adversely affected. It will be necessary to phase out subsidy in a gradual manner. An unambiguous approach by the state with regard to subsidy is essential for purposeful tariff regulation.

While an appropriate regulatory framework can be crafted by taking into account the key factors indicated above, the success of regulators in achieving the objectives of public policy will depend on genuine support from the government, quality of decisions of the regulators, and public awareness.

Transition Plans for Power Sector Privatization: Case of Delhi and Karnataka

Abstract

The Orissa Power Sector Privatization experience has highlighted the need for a well structured transition plan with a key role for the state government. The transition plan provides a contractual agreement among the state government, private investor cum operator, and the regulator. This agreement represents the sharing of risks and responsibilities and is backed by financial commitments. The main elements of this arrangement are:

(i) Multi year tariff scheme which allocates risks between the distribution company and
consumers.

(ii) An agreement between the State Government and the private investor which defines their sharing of risks and responsibilities.

(iii) A financial plan which provides for funding of capital expenditure and losses during the transition period.

This paper examines the Delhi privatization and the proposed privatization in Karnataka in this framework. We find that in both cases the major missing link is the multi year tariff scheme by the regulator. Moreover, in the case of Karnataka the proposed agreement results in most of the risks being borne by the government, making the agreement unsustainable. It, therefore, appears that in most states, which have problems similar to that of Karnataka, the transition phase may have to be preceded by some fundamental risk mitigation by the government, without any private sector involvement.

Transition Plans for Power Sector Privatization: Case of Delhi and Karnataka

INTRODUCTION

The Orissa experience has highlighted several important aspects of the power sector privatization process. The privatization process in Orissa was marked by insufficient investor interest, with only three bidders finally submitting bids for the four distribution companies (DISTCOs) put up for privatization. There were several reasons for this lack of participation as revealed in an Investor Survey2. These included tariff uncertainty, high level of losses and collection risk, lack of paying capacity of many consumers, problems of inherited staff, difficulties of imposing own management and bringing in own employees and poor information from Government of Orissa.

In Orissa, even after privatization, efficiency improvements were marginal and T & D losses continued to be high. With the regulator in no position to allow the inordinately high levels of T&D losses while setting tariffs, regulated tariffs, based on lower T&D loss benchmarks, were inadequate for the distribution companies to cover their costs and earn a return. Regulators blamed the DISTCOs for the lack of improvement in efficiency. The DISTCOs, in turn, blamed the regulators, for tariffs which were grossly inadequate to cover costs; the government, for not providing adequate support for preventing thefts and enforcing disconnections; and the inherited manpower, for refusing to change their SEB ways under the protection of prior agreements with the government. With neither the private investor nor the government willing to finance the losses, the DISTCOs have been unable to pay GRIDCO for bulk supply, which in turn has not paid the generators, resulting in a chain of payables and receivables.

In light of the Orissa experience there is now a heightened awareness of the risks during the reform process. Private investors are unwilling to participate in a Orissa type of exercise with no clear definition of the risks that they would be taking on. There is, therefore, the need for a transition plan with a well-defined sharing of risks and responsibilities among the government, private investors and consumers. Private investors are unlikely participate in the privatization process in the absence of such an arrangement. The main elements of such a transition plan are given below:

Multi-year tariffs to enable licensees to plan efficiency improvements and investments.

A multi-year tariff framework is essential for planning for the future with some degree of certainty and should provide for the following:

- pass-through of power purchase costs, not just a fuel price adjustment. Power purchase costs are beyond the control of the licensees and will have to be passed through subject to efficiency in purchase and dispatch.
- phased reduction and ultimate elimination of cross subsidies. In case the government wants to provide subsidies to certain segments these should be clearly targeted and paid for separately by the government.
- tariffs should be based on *standard* costs and efficiency parameters. The standards are not hypothetical but based on the actual technologies in use. These standards will be set after negotiations with the operator and using

inputs from independent experts. This manner of tariff setting will be a departure from the current practice in which tariffs are set using a mixture of standard and actual costs and efficiency. Such tariffs burden paying consumers with the inefficiencies and thefts of the system. This is not only unjust but can also lead to paying consumers becoming non-paying. Such tariffs will also encourage industrial consumers to exit from the system and resort to captive supply.

Licensees will have to commit to a binding multi-year program to achieve the standard costs and efficiency parameters.
Licensees will have to provide to the government a multi-year schedule of progress towards achieving the standards on which the tariffs are based. For this schedule to be meaningful the efficiency parameters should be measurable. This requires a level of metering, not necessarily 100%, which will provide reasonably reliable T&D loss data. This schedule will have to be negotiated between the licensees and the government since the government will be paying for the costs of the transition. An essential element of the plan would be a clear statement of the commitments by the licensees and the government in achieving efficiency targets and ultimately viability of the sector.

Need for subsidy during the transition phase to bridge the gap between targets and actuals.
Given the multi-year tariff schedule and the multi-year program of efficiency improvements the cash deficits of the licensees can be worked out. The cash deficit represents the cost of the gap between standard and actual costs and efficiency parameters. This cash deficit will have to be financed by the government. Other alternatives such as creation of regulatory assets are unlikely to be credible.

The final outcome of this exercise will be a tariff plan from the Regulator, an efficiency improvement plan from the DISTCOs; and a subsidy commitment from the government, which together ensures break-even for the licensees. These will together constitute a binding agreement among the Regulator, DISTCOs and the government. The job of the Regulator would be to enforce these commitments.

It is useful to view the transition plan from a risk allocation perspective. The multi-year tariff plan specifies the risk allocation between the consumer and the licensee. To the extent tariffs are based on standards, or efficiency benchmarks, the licensee bears the risk of deviation of actuals from the standards. On the other hand, provisions for pass-through of actual costs, transfer the risk to consumers. The agreement between the licensee and the government, in turn determines the sharing of risks allocated to the licensee , between the licensee and the government. In all this risk sharing the basic principle applies - risk should be borne by the party in the best position to influence the outcome. Such an allocation creates the right incentives and reduces costs of risk bearing. This threeway allocation of risks implies that the tariff structure and the agreement between the government and the licensee must be consistent with each other and, therefore, jointly determined.

This paper examines the experience of Delhi and Karnataka in formulating and implementing a transition plan for privatization. In both cases, regulators are reluctant to commit to multi-year tariff principles. While they recognize that multi-year tariffs are to be based on standards and not actuals, they conclude that the level of information about the system is inadequate even for formulating standards. Simultaneously, the private investor is unwilling to take on any significant risks and would like most of the risks to be borne by the government. This is especially true of the 'distribution margin' approach of Karnataka. The main conclusion of the paper is that the government and the SEB need to take certain fundamental risk mitigating actions prior to attempting privatization.

DELHI PRIVATIZATION: BIDDING FOR AT&C LOSSES

The Delhi privatization is structured to overcome some of the concerns arising out of the Orissa privatization and the failed Kanpur privatization attempt. The Delhi privatization structure attempts to reduce the tariff uncertainty by fixing a loss curve to be used by the regulator in setting tariffs. It also provides for the total amount of subsidy that can be built into the tariffs and financed by the government.

The Government of National Capital Territory of Delhi notified the Delhi Electricity Reform (Transfer Scheme) Rules, on 20th November 2001. As per the Transfer Scheme, the functions of DVB have been unbundled into a generation company, a transmission company, three distribution companies and a holding company which will hold shares in the other five companies and liabilities of the Board.

Privatization policy

The government initiated a two two-stage bidding process for sale of 51% of the equity of the three distribution companies. The parties were short-listed during the first stage (RFQ) for bid submission, to whom, Request for Proposal and Information Memorandum were issued on 22nd November, 2001. On the same day the government notified the Policy Directions for the privatization process:

i) The reduction in loss levels/ efficiency gain to be achieved is to be determined through
competitive bidding. 51% equity shares shall be offered at face value to the winning bidder.

ii) The measure of overall efficiency of distribution business is based on Aggregate Technical and Commercial Losses (AT&C losses) which is the difference between units input and units realised. The AT&C losses shall form the basis for determination of tariff and computation of incentives for better performance.

iii) The retail tariffs for the three distribution licensees shall be identical till the end of 2006-07, i.e., consumers of a particular category shall pay the same retail tariff irrespective of their geographical location within the National Capital Territory of Delhi.

iv) Till the end of 2006-07, subject to all expenses that shall be permitted by the DERC, tariffs shall be determined such that the distribution licensees earn, at least, 16 % return on the issued and paid up capital and free reserves.

v) The Govt. of NCT of Delhi will make available to the Transco an amount of the order of, approximately, Rs. 2600 crores as loan to be repaid in a manner as agreed to between the Transco and the Govt. of NCT of Delhi. The Transmission Company will use the loan to bridge the gap between its revenue requirements and the bulk supply price that it may receive from the DISCOMs.

Aggregate Technical and Commercial Losses

The three DISCOMs and the TRANASCO filed a joint petition before the DERC on December 21, 2001for determination of Bulk Supply Tariff to be charged by the TRANSCO till March 31, 2002 and the opening levels of Aggregate Technical & Commercial losses (AT & C losses) for the DISCOMs.

As laid out in the Policy Directions, the determination of AT&C loss for each DISCOM involves the estimation of

(i) T&D loss, as the difference between the units billed and the units input into the DISCOM as a ratio of the energy input into the DISCOM,

(ii) Collection efficiency, as the ratio of amount collected to amount billed.

(iii) Units realised, as the product of units billed and the collection efficiency

(iv) AT&C losses, as the difference between units realised and units input into the DISCOM as a ratio of units input into the DISCOM.

The AT&C loss measure can be expressed more simply with the following expression.

The expression in brackets can be referred to as "the effective percentage of input units to the system realized as cash at the average tariff realized." The principle of measuring losses up to the stage of realization is to circumvent the problem of erroneous billing.

During the regulatory proceedings the government clarified that prior to the bidding it shall stipulate the minimum loss reductions to be achieved each year for the next five years. This minimum loss reduction criterion would be set so as to make the sector self-sustaining within a period of five years. The investors would be required to bid over and above the minimum loss reductions stipulated by the Government, and this bid, then would form the basis for future tariff determination purposes. In other words, only if the Distribution Company achieves the loss reduction as per their bid, would they be able to earn 16% return (but no additional incentives). The Government reinforced the point stating further that even a small underachievement in respect of the loss reduction targets will imply erosion of the entire return of the Distribution Company. It was argued that this provision should act as a deterrent to any underachievement. The incentive would be awarded only if the loss reduction is higher than the level proposed by the investor, and this incentive would be shared between the Company and the consumer in 50:50 ratio.

With regard to the revenue bridging loan of Rs. 2600 crore to the TRANSCO, the government stated that the turnaround of the distribution business and the financial viability of the Transmission Company would be ensured by the minimum loss reduction targets stipulated for bidding, and the assumptions of reasonable tariff increases. The distribution business is expected to turn profitable well within the time frame of five years. This would ensure that the Transmission Company would be able to more than fully cover the cost of power it purchases. The Government has also satisfied itself that the loss reduction would be sufficient to meet the loan repayment and hence there would be no need to pass the impact of this loan to consumers.

The following table shows the actual past AT&C losses and the opening level of AT&C losses approved by the DERC.

CEDEDCL	65.5%	61.2%	60.7%	63.8%	57.2%
NNWDDCL	57.5%	49.7%	50.8%	53.6%	48.1%
SWDEDCL	57.4%	50.9%	50.9%	53.8%	48.1%
ALL (DISCOMs)	**59.6%**	**53.5%**	**53.6%**	**56.5%**	**50.7%**

Bulk Supply Tariff

As per the above principles laid down in the Policy Directions issued by the Govt. of NCT of Delhi, the Bulk Supply Tariff for each DISCOM is to be determined on the basis of its paying capacity. The paying capacity for each DISCOM (amount available for power purchase) is to be computed by projecting the expected revenues and deducting the revenue requirement, excluding the power purchase expenses. This methodology of bulk tariff calculation ensures recovery of the revenue requirement of the DISCOMs leaving an unbridged revenue gap in TRANSCO. The Revenue Gap for Transco as projected by the petitioners and as estimated by the Commission for the two-month period Feb-Mar'02 is shown in Table

Revenue Gap of Transco (Rs Crore) for Feb-Mar'02

	Proposed	**Approved**
Revenue Requirement (A)	714	703.0
Revenues		
CEDEDCL	87	101.5
SWDEDCL	170	182.4
NNWDEDCL	117	124.5
NDMC	50	50.5
MES	8	8.5
Total Revenues (B)	432	467.4
Revenue Gap (A-B)	**282**	**236**

The Revenue Gap of Transco for two month period Feb-Mar'02 as estimated by the Commission is **Rs 236 Crore**, which is equivalent to Rs 1,414 Crore for the entire year. This represents a much higher gap than what was anticipated in the tariff order passed in May 2001. The DERC had arrived at an aggregate revenue requirement (ARR) of Rs. 5239.34 crores for the year 2001-02. The approved tariff and other charges were expected to generate Rs. 4116.65 crores of revenue. The Commission expected DVB to generate additional revenue of (or reduce costs by) Rs. 250 crores from efficiency improvements in its operation. This implied a revenue gap of Rs. 872.7 crores to be carried forward as regulatory asset. It should be pointed out that the ARR was based on a T&D loss estimate of 47% and did not account for less than 100% collection efficiency, with a small provision for bad debts.

Bidding outcome

Two out of the six pre-qualified bidders dropped out at the RFP stage. Only two bids were received on the date of opening, viz. BSES Ltd. and Tata Power Co. Ltd. both offering AT&C Loss reduction much lower than the targets set by the

Government. While BSES Ltd. bid for all the three companies, M/s. Tata Power submitted bids only for North-Northwest and South-West companies. As these bids were not satisfactory, a Core Committee consisting of senior officers negotiated an agreement. The minimum AT&C loss reduction targets set by the Government, the original bids received and the revised negotiated and accepted bids are given in the table below:

AT&C Loss Reduction Targets (figures in Percentage)

	2002-03		**2003-04**		**2004-05**		**2005-06**		**2006-07**	
DISCOM	**MINM**	**RVSD**	**MINM**	**RVSD**	**MINM**	**RVSD**	**MINM**	**RVSD**	**MINM**	**RVSD**
CENTRAL EAST (BSES)	1.50	0.75	5.00	1.75	5.00	4.00	5.00	5.50	4.25	5.00
SOUTH WEST (BSES)	1.25	0.55	5.00	1.55	4.50	3.30	4.50	6.00	4.00	5.60
NORTH NORTHWEST (TATA)	1.50	0.50	5.00	2.25	4.50	4.50	4.25	5.50	4.00	4.25

MINM - Minimum prescribed
RVSD - Revised Bid accepted

Total AT&C Loss reduction targets for the period 2002-03 to 2006-07 (figures in Percentage)

DISCOM	**Minimum**	**Original Bid**	**Revised Bid**
CENTRAL EAST (BSES)	20.75	14.00	17.00
SOUTH WEST (BSES)	19.25	13.35	17.00
NORTH NORTH-WEST (TATA)	19.25	13.50	17.00

The negotiations also resulted in some other minor adjustments to the terms of the agreements.

- The moratorium on repayment and interest waiver on Holding Company debt will be extended to the fourth year instead of three years in the original structure. In case a DISCOM underachieves in the fourth year, the moratorium on Holding Company debt will be increased to fifth year for that company.
- With regard to over-achievement/underachievement for the transition period of five years, the cumulative effect till the end of the relevant year shall be taken and appropriate adjustments made. The method of treatment will be as follows: If the AT&C loss reduction of a DISCOM is better than the minimum AT&C loss levels stipulated by the Government, it shall be allowed to retain 50% of the

- The proposal to have uniform targets for reduction of T&D losses (2% each for the first three years and 3% each in the subsequent two years) for all the three distribution companies, in spite of differences in consumer and load mix, is not acceptable.
- The Commission did not accept the DVB proposal to project the annual Capital expenditure in each year for the next five years on the basis of historical trend. Such projection requires information on the present status of the assets, the need for investment, the availability of funds etc. None of this information is available.

Overall, the Commission noted that, "multi year tariff approach linking to some indices would be suitable for mature and stable environment so that the investing companies can undertake efficiency improvements and reap benefits from them. The efficiency benchmarks have to be robust and should be such that neither the utility nor the consumer should suffer or benefit unduly in future. In conclusion the Commission finds that although " multiyear tariff setting principles " is an issue that merits consideration it is not the mature stage for fixation of multiyear tariff principles for the purpose of this Tariff Order."

Remarks

The main problem with the Delhi privatization appears to be that the DERC has not committed to any retail tariff principles. In fact it has rejected outright the multi-year tariff principles proposed by DVD prior to privatization. This does not impact the licensees since they are assured of 16% return on equity so long as they achieve the loss reduction targets. However, it has implications for the subsidy payable by the government.

The licensees are committed to reducing AT & C losses from 50.7% to 33.7% over a period of 5 years. It appears unlikely that the DERC will be able to pass the full amount of AT&C losses, even after the achievement of the committed reductions, through to tariffs. In fact the current tariffs are based on 47% T&D loss with 100% collection efficiency. In addition there is provision of Rs.250crores efficiency gain. The projected revenue gap of Rs.872 crores is to be treated as a regulatory asset. The private licensees are unlikely to agree to ad hoc efficiency gains and there is no scope for creation of regulatory assets. It is quite likely that the budgeted Rs.3,450 crores for subsidy will turn out to be inadequate. Hence, the subsidy amounts need to be monitored carefully and additional provisions made as and when necessary.

KARNATAKA: DISTRIBUTION MARGIN APPROACH

Karnataka Electricity Reform Act, 1999 was passed and brought into effect from 1st June 1999. A Three-Member Karnataka Electricity Regulatory Commission was established and constituted during October 1999 and made fully operational. Karnataka Power Transmission Corporation Limited (KPTCL), a principal Transmission Company and Visvesvaraya Vidyuth Nigama Limited (VVNL), a Generating Company were corporated under the Companies Act during July 1999, as immediate successors to the erstwhile Karnataka Electricity Board, and made functional under a statutory transfer scheme.

The Karnataka Electricity Regulatory Commission (KERC) issued its first tariff order in December 2000 and the second in 2002. The Government of Karnataka detailed the nature and quantum of funding support to the sector over the next ten years in a Financial Restructuring Plan.

The government appointed Consultants to suggest distribution configuration, develop the privatisation strategy and implement the chosen privatisation strategy. The consultants surveyed almost all the key investors who had participated/ expressed interest in the previous Indian electricity distribution privatisation processes in Orissa, Haryana, Kanpur, and Delhi. Almost all investors surveyed clearly expressed their unwillingness to consider an Orissa type DISTCO covering a large land area and consumers with a mix of rural and urban load. While investment interest was expressed for urban or largely urban businesses, investors were also clear that there should be a strategy in place to deal with improvements in the rest of the sector. This was required to ensure that the overall electricity industry was viable, based on growth in internal cash flows and government subsidy, at a level which the government could bear.

The main conclusion of the consultants was that the Government of Karnataka must bear many of the risks of the distribution business until such time as the electricity industry has achieved a stable and sustainable financial condition. This period, when the industry is moving to financial sustainability, is described as 'transition'. This concept of 'transition' is key to the proposed privatisation strategy. During this period, investors will bear the risk of managing the operating cost and capex of the distribution business; will share some of the risks with the governmnet by exposing their returns to penalties for non-achievement of specified performance targets; and will be have an incentivie to deliver efficiency improvements. The major risks from which the privatised distribution businesses will be protected during the transition period include:

- Tariff risk: The risk that the regulator, perhaps with influence from the government, will not move tariff levels to full cost recovery;
- Collection risk: The risk that collections, particularly from rural consumers and government entities, will continue at low levels, perhaps because of a lack of the support from law enforcement and judicial bodies for enforcement of the cut-off for delinquent consumers;
- Commercial losses risk: The risk that commercial losses, due in particular to theft, cannot be reduced, again due to lack of official law enforcement support.

By passing these risks to the government during the transition period, the government will have significant incentives to manage the risks and thus contribute to the industry as a whole moving to financial sustainability. As a result of the targeted incentives for performance improvement in these and other areas, the private sector operators are expected to pressure the government to take the necessary risk management actions during the transition period. In the process they will be sharing some of the risks to the extent that their performance improvement targets are not met, and the incentive payments are not made.

The means for allocating the risks during the transition period is the 'distribution margin' approach. In this approach only the following risks are planned to be transferred to the investors during the initial transition period.

1) Collection risk in respect of metered consumers:
2) Theft risks: However, the risk of starting theft levels being different from levels stated should be allocated to the government.
3) Inaccurate metering.
4) Operating Expenditure Management Risk.
5) Capital Expenditure Management Risk:
6) Technical Losses Risk: The government will have to bear the responsibility of actual technical loss being different from what is stated.

Distribution Margin approach4

Under the Distribution Margin approach, during the transition period, the operator is allowed to earn a Distribution Margin (DM) as compensation for operating the distribution business in a zone. This has two components: Base Revenue and Incentive Charge. The Base Revenue is a specific amount of revenue that the operator is allowed to retain from gross customer receipts. In addition, the operator is allowed to earn an Incentive Charge.

Base Revenue

The Base Revenue is an amount of revenue that the operator is allowed to retain to meet the total cost of operating the "wires business". The estimated operating costs will be calculated inclusive of current interest and depreciation, and a low return on equity plus a reasonable amount for capital investment for system rehabilitation and expansion. The Base Revenue will be set for each year of the transition period.

The operator will be allowed to adjust the Base Revenue to account for several extraordinary events that may occur in the transition period. These events will be specified in the bidding and contract documents. The events include the following:

- Violent resistance to increased Tariffs collection efforts;
- Systematic or widespread destruction of meters by consumers;
- Orders from the Government to increase the supply of electricity provided to rural consumers;
- Reductions in wholesale supply available from the Central Energy Trading agency that reduce the total supply to each company below a specific minimum level;
- Intervention by the Government in the implementation of tariff orders that result in failure to implement tariff increases allowed by KERC.
- Non payment by government owned/affiliated consumers
- Government restriction of disconnection of customers that qualify for disconnection

The extraordinary adjustments ensure that the private operator does not bear the financial consequences of events that are outside of their control. Most of these events are either directly or indirectly controllable by the Government.

4 This section is based on "Description of the details of the Distribution Margin Approach", January 9, 2002, submitted to the Government of Karnataka.

Incentive Charge

The operator must collect a minimum gross revenue, or Minimum revenue Requirement (MRR). If the operator does not achieve this MRR, it must pay a penalty. The MRR will be set at a specific value for each transitional year.

The Incentive Charge is the amount (paise) per rupee collected above the minimum required collection level. To earn a higher total Incentive Charge, the operator has interest in converting electricity input into the distribution zone from non-paying to paying units. They also have an incentive to increase units of electricity input into the distribution zone.

This system of incentive charges also creates an incentive to shift power from low paying to high paying customers. To address this there will be a binding obligation on the operator to meet a minimum supply obligation to low tariff customers. To the extent that tariffs for some categories remain far below cost an administrative mechanism will have to be developed to determine how much electricity these customers receive so as to control the level of subsidies.

Bidding Terms

Bidding for the companies will be on the basis of the lowest Incentive Charge that is offered by bidders for each distribution company. The bidder that offers the lowest Incentive Charge will buy 51% of the equity of the distribution company

The winning bidder must buy the offered equity at a price fixed before the submission of bids. Given the uncertainty of possible returns, it may be desirable to set a cap on the equity return that may be earned by each operator. The cap should reflect the fact that the allowable return under the Base Revenue is low, and the operator will not earn an acceptable return unless it performs well.

Service standards will be established in the licenses and distribution code. These will be progressive to allow a gradual transition to an international standard within a reasonable time period. When the Base Revenue is determined, it will be assumed that all operators need to make a specific level of capital investment to achieve the service standards. Operators will review the service standards in the bidding documents, licenses and distribution code, and will form their own estimation of necessary capital expenditure. If the capital expenditure has been underestimated the operators will increase their bid Incentive Charge accordingly. Therefore, there is a reasonable range within which service standards can be set. However, if bidders are unwilling to invest because available information is insufficient, then a pass through arrangement for capital expenditure may have to be implemented.

Financial Balancing Mechanism

For a period of time, the amount of revenues earned in the system will not be sufficient to pay the full costs of generation, transmission and distribution. For this purpose, a **financial balancing mechanism** must be developed. The financial balancing mechanism involves the following steps:

1. The operator collects all consumer revenues associated with the electricity supply business in their zone. The operator deducts their allowable Base

Revenues and Incentive Charge each month. The operator pays transmission charges, as determined by the KERC.

2. The operator remits the balance to the Central Energy Trader (CET). The CET is governmentowned entity responsible for procuring and selling wholesale electricity until a market is introduced, or until operators are obligated to procure supply directly. This balance will be insufficient to cover the total wholesale energy charge for the month. The CET calculates the deficiency amount and presents this calculation to the Government. This amount is a subsidy.

3. Before the beginning of each year, the Government estimates the annual subsidy payment for the year and allocates funds following standard Government procedures. The Government will pay the Central Energy Trader for the deficiency amount.

Transition Arrangements

After a specified number of years, each distribution zone will "transition" to an arrangement in which the operator must pay all costs of generation and transmission, and earn residual income sufficient for distribution costs. The date of transition for each zone will be stated in the license and contractual arrangements. The transition, however, will be dependent on the GoK and KERC taking specified actions prior to the end of the transition period. The length of transition will depend on the ratio of below-cost to above-cost customers in each zone. Following transition the operator becomes responsible for all costs of generation, transmission and distribution.

Before the transition date, KERC will carry out a tariff setting exercise based on the principles of the "Multi-year Tariff". This involves two key steps. First, the operator and KERC agree on a revenue requirement to be used for setting tariffs in the first year of the new rate-setting period. This year is the first year of operation after the transition date. Second, the operator and KERC agree on an efficiency gain to be achieved during each year of the charging period. It is recommended that this efficiency factor be set by a process that involves an efficiency study conducted by an independent technical advisor to KERC.

Karnataka Regulator's comments on the proposals

The Commission has expressed serious reservation about the practicability of implementing the suggestions. These reservations arise on account of the following issues.

1) Lack of data: The initial base line conditions that need to be defined require a substantial input of fairly accurate data which the KPTCL system has so far been unable to provide.

2) Moral Hazard: The structuring of the proposed risk allocation seems to carry with it the potential for considerable moral hazard especially in the absence of clear baseline data.

3) Contractual disputes: An extremely fine slicing for the risks and responsibility could very easily lead to complex disputes and litigation relating to the fulfillment of obligations or otherwise on the part of either party. For example, many performance standards require heavy capital investment to be achieved. If the funding for this investment is not available due to lack of government guarantees, responsibility for the failure to achieve the standards will get diluted.

This is in addition to the extremely difficult task of determining what standards require how much capital investment. This difficulty, which would be very great even in an ongoing dialougue between a regulator and a licensee, would get converted into a near impossibility when the same is attempted to be finalised as one of the bidding parameters for the privatisation.

4) Limited scope for efficiency gains: The risk allocation matrix clearly shows that efficiency gains can be expected only in Opex Management and in collection from metered consumers. Even though Capex Management may have a small potential for efficiency improvements, the uncertainties about Capex funding could lead to non realisation of this potential. Even in the case of Opex Management efficiency gains will be restricted because of constraints on the freedom to deal with Human Resources issues.

5) Role of the Commission in the Privatisation Process: The Strategy paper provides that in the transition period, the basic document that will govern the Sector will be the contract entered into between GOK (including KPTCL) on the one hand and the investor on the other. The License that is required to be issued to the Distribution Company would, according to the Consultants, have to reflect faithfully the various terms of the contract and the role of the Commission would be essentially that of monitoring the implementation of the Contract by the Licensee and enforcing the obligations undertaken by them.

Multi-year tariffs

The Commission had earlier clarified its position on multi-year tariffs in its September 2000 tariff order. According to the commission in the case of multi-year tariffs,

a baseline level of expenses that need to be properly incurred for delivering electricity is first established and some estimate of the requirements of expenditure, including of capital expenditure, for the tariff period is then made.

The Utility is thereafter allowed to adjust its tariffs annually on the basis of some index of inflation and as reduced by a productivity improvement factor. This annual change in tariffs does not require any further approval from the Regulator. The tariffs are reset at the end of each tariff period in such a way as to pass on the efficiency gains achieved during that period through to the Customers in the next succeeding tariff period.

However, the commission is of the opinion that multi year tariff setting is not advisable at the present juncture for the following reasons :

i. Base line data is either not available at all or is completely unreliable. The Regulator and the Utility will have to work closely and intensively for quite some time more before acceptable standards of data availability are achieved.

ii. The Commission has also not yet set up the standards that are necessary to operate a formula based tariff revision system. This would require instituting a number of detailed studies.

iii. Given Karnataka's Hydro-Thermal Mix and the significant volatility in hydro power

availability, multi-year tariff setting on the basis of automatic adjustments according to a set formula would be difficult.

iv. Karnataka also faces the prospect of additional capacity coming in at substantially higher costs than the current average cost of supply. A formula that will cover all these contingencies appears difficult.

The Commission would be examining this issue in greater detail "in order to balance the requirements of private players for greater certainty regarding their cash flows with the practical requirements of the present situation."

Remarks

The distribution margin (DM) approach is similar to the Delhi approach of bidding for AT & C losses. In the DM approach bidding is for the share of additional revenue, above the minimum base revenue, to be retained by the licensee as an incentive. However, the Karnataka system poses much larger risks for the licensee. Given the large agricultural and rural load, both measuring and managing T&D losses is likely to be significantly more difficult. Moreover, given the geographical spread of the system controlling employees is also likely to be more difficult. In this situation the private licensees are unlikely to expose themselves to high powered incentive structures. They are more likely to look for a reasonable minimum return through the base revenue rather than risky higher returns through the incentive payments. As in Delhi, even in Karnataka the regulator does not seem to be inclined to providing multi-year tariff principles. A DM approach without a multi-year tariff principle would make the subsidy payment unbounded.

CONCLUSIONS

The Delhi privatization guarantees a 16% return on equity, subject to the licensees achieving their committed loss reduction targets. These targets were to be determined by a bidding process but, given the poor response, they were finally determined by negotiations. The government has provided for a subsidy of Rs. 3,500 crores since retail tariffs are not expected to be adequate to enable the licensers to pay full cost of power and also earn the 16% return. However, since the regulator has refused to commit to the multi-year tariff principles there is some uncertainty about the full extent of the government exposure. In addition, there may be disputes between the government and the licensee about the measurement of the true level of AT&C losses and the licensees' achievement of committed reductions. In fact the opening level of AT&C losses, as determined by the regulator, is itself based on certain assumptions and projections.

The distribution margin approach being proposed for Karnataka does not require the licensee to commit to any loss reduction. The licensees are assured of a minimum guaranteed return and they can earn incentives by generating revenues above the minimum revenue requirement. The license is awarded to the investor bidding the lowest incentive share. Given the risks of the power sector, licensees are likely to rely less on incentives and more on the minimum guaranteed return in their overall return calculations, thereby passing on most of the risks to the government. Moreover, with the regulator reluctant to commit to multi-year retail tariff principles the government is likely to end up with an open ended exposure.

The main implication of the Delhi privatization and the Karnataka proposals is that given the state of the power sector investors are unwilling to take on any risk above the bare minimum, and the regulator is unwilling to commit to any set of multi-year tariff principles. The resulting privatization is unlikely to be effective and may even result in Enron kind of disputes. At best such privatization could be successful in compact, high visibility urban zones like Delhi. However, they are unlikely to be successful in most states with large rural and agricultural load and extensive networks which are difficult to administer.

The Kanpur Regulator has correctly pointed out that given the problems in the sector and the lack of data the contracts are likely to be severely incomplete and unenforceable. Moreover, as pointed out by the World Bank in the case of

Orissa reforms, "Privatization without the transfer of risks is amongst the worst of possible privatization options".[5] The logic of the Distribution Margin approach appears to be that even the worst privatization may be better than no privatization at all. Perhaps the transition phase of the 'Distribution Margin (DM)' privatization needs to be preceded by a 'pre-transition' no-privatization phase during which the State Electricity Boards undertake certain fundamental risk mitigating actions. Meaningful privatization is possible only if some progress is made in the following areas:

(1) Close to 100% metering, billing and collections. These activities could possibly be out-sourced but the government would have to provide the support of the government machinery.

(2) Determining the assets and liabilities of the successor companies following corporatization.

(3) Disconnection of illegal connections. This is mainly a law and order problem.

(4) Negotiating less one-sided terms with employees so as to provide management with some flexibility in motivating employees to perform.

(5) Progressive reduction in cross-subsidies in tariffs. This is for the regulator to do but the government should refrain from any intereference.

(6) Transfer of irrigation load to a separate organization. Given the magnitude of the agriculture problem it would be virtually impossible to run a business on commercial basis with any significant agriculture load. There is a need to consider alternative institutional arrangements such as Village Committees in Orissa[6] or co-operatives in Bangladesh.

These are policy induced problems and can only be resolved by the government. In any case even with the DM privatization the government would have to perform this function. The DM approach assumes that somehow the government would have greater incentive for taking these actions with a private operator running the show. However, it is equally likely that with a DM style privatization the responsibility for resolving these problems are likely to get diluted with the government trying to shift some of the responsibility and the blame on to the private investor.

---

[5] World Bank Staff Appraisal Report of the Orissa Power sector Restructuring Project, April 1996, (Annex 2.3 page 13)

Telecom Deregulation

Telecom Regulatory Authority of India, New Delhi

Rakesh Kapur

Background paper*

Transition to a liberalized environment: experiences and issues in regulation 321–329

The GoI (Government of India) ushered in an economic reform process in the early 1990s. This initiated intensive policy and structural changes in various economic sectors to enhance the rate of economic growth in a sustained way. These measures included rationalization of the tax structure, reduction in government expenditure, financial sector reforms, dismantling of numerous irrational regulations in the industrial sector, and a more liberal regime for foreign investment. The new economic policy focused on liberalization, delicensing, and deregulation. Apart from encouraging private participation in core sectors, it encouraged private initiative in the development of infrastructure. However, the lack of fully transparent policies and political motivation, coupled with the continuation of licensing in many sectors, was responsible for very little actual private participation. Nothing substantive has been achieved so far in this regard. In fact, the sluggish pace of reforms in the infrastructure sector and inadequacies in terms of quality, quantity, and efficiency in infrastructure facilities have dampened the pace of overall socio-economic development in the country.

Opening up of the telecommunications sector in India

The GoI acknowledged the need for a world-class telecom network in the country to facilitate global competitiveness and accelerate exports and inflow of foreign direct investment, which in turn would stimulate economic activity. This necessitated telecommunications reforms to introduce competition in the interest of lower costs, lower prices, greater innovation, better service for consumers, and increased investment in the sector. Following a gradual gradient, liberalization of the telecom sector was initiated with the opening up of telecom equipment manufacturing in 1991 and inviting private sector participation in a phased manner for e-mail, voice mail, data services, audio and video-text services, radio paging, and cellular mobile services.

*** This paper was prepared for TERI by the author. The paper presents the author's personal views.**

These service segments were opened to private investment in 1992. Cellular mobile telephone services was opened up with two new service providers in each circle operating against fresh licences.

National Telecom Policy, 1994

The NTP (National Telecom Policy), 1994 was another step in this direction, reiterating the government's commitment to pursue these reforms aggressively. The objectives defined by the NTP, 1994 included the availability of telephones on demand, provision of world-class services at reasonable prices, and universal availability of basic telecom services to all villages. The policy recognized that the resources required for achieving these objectives would not be available with the government and that private investment was essential to bridge the resource gap. The NTP, 1994 also initiated competition in basic telephone services by permitting one new entrant in each circle to compete with the incumbent (DoT [Department of Telecommunications] / MTNL [Mahanagar Telephone Nigam Limited]). Private sector entry has, however, been slower than what was anticipated in the NTP, 1994. Basic telecom services by private operators have only just commenced in a limited way in two of the six circles where licences were granted. Some of the targets envisaged in the NTP, 1994 have remained unfulfilled, thereby raising concerns regarding further development of the sector. In spite of the rapid roll-out of cellular mobile networks in the metros and circles with over one million subscribers currently, most of the operators are in the red. Actual revenues realized by these projects have been far below the projections. The high licence fees have eroded their viability further. Many operators are unable to achieve financial closure for their projects.

Status of the telecom sector in India

In the telecommunications area, India is identified as one of the top markets in the Asia-Pacific region and perhaps the largest market after China for foreign companies. At the end of March 1998, the telecom network in India consisted of 23 406 telephone exchanges with equipped capacity of 21.26 million lines and 17.8 million telephone connections. Of the 14.54 million DELs (direct exchange lines) in 1997, about 50% of the telephones were installed in 19 cities. New Delhi and Mumbai account for about 25% of all telephone connections in India. Of the 600 000 identified villages, only half have the facility of a public telephone. The remaining villages are proposed to be covered by the year 2002. In spite of achieving an annual compounded average growth rate of 16.5% in the telephone network over the period 1991–97, the estimated waiting list for telephones stood at 3.34 million as on 31 March 1997.

The DoT's monopoly in domestic long-distance traffic has continued except for the carriage of intra-circle domestic long-distance traffic by new entrants in basic and cellular services. The VSNL (Videsh Sanchar Nigam Limited), a government-owned company, has monopoly in international long-distance traffic. The government has a commitment to the WTO (World Trade Organization) to review the present policy on domestic and international long-distance services in 1999 and 2004, respectively. Internet and GMPCS (Global Mobile Public Communication System) services were opened up for private participation on more liberal terms during the last quarter of 1998. Apart from open entry, the licence fee has been waived for ISPs (Internet service providers) who have also been permitted to set up international gateways for Internet traffic, reducing VSNL's monopoly. A revenue-sharing arrangement has been proposed for the payment of licence fee by GMPCS service providers.

Annex 1 gives the status position on different segments in the telecom sector in India.

gislative mework

Even during the liberalization phase, the telecommunications system in India continued to be governed by the provisions of the two archaic pieces of legislation, namely the Indian Telegraph Act, 1885 and the Indian Wireless Act, 1933. Hardly any amendments were carried out to recast these Acts and make them consistent with or appropriate for handling the rapid changes and emerging requirements.

A special regulatory framework is particularly important in the early stages of market liberalization to ensure effective competition, more so in the area of public utilities such as telecommunication services, which till recently were considered natural monopolies best owned and managed by the state. Appreciating its inevitability, the modalities for setting up an independent regulatory authority were conceived in January 1994. TRAI (Telecom Regulatory Authority of India) was, however, positioned in March 1997 as a statutory authority.

Since fundamental changes have taken place in the telecom sector, the immediate need is to replace the Indian Telegraph Act, 1885 and the Indian Wireless Act, 1933 with a new forward-looking telecommunications act. The new Act must be equipped to handle the changed market and technological conditions in the telecom sector as well as comprehensively address the situations arising due to the convergence of telecommunications, broadcasting, and information technology.

Approach to reforms

While the initial sequencing of reforms in the telecom sector was not proper, the overall policy framework and institutional arrangements have also not been very conducive to effect accelerated reforms in this sector. Functions of the policy maker, licensor, and incumbent service provider have continued to vest in the single agency, namely the DoT, resulting in a conflict of interests in its different roles. In spite of the government's reiteration of segregating the service provider function of the DoT from its policy-making/licensing functions, nothing concrete has materialized as yet. Instead of converting the service provider entity into a corporate entity, as announced earlier by the government, the latest proposal under consideration contemplates setting up a separate department of telecom services as a precursor to corporatization. The continued concentration of these functions in a single agency, which is also the dominant incumbent, has been another hindrance to promoting effective competition. New entrants have perceived a lack of objectivity and reciprocity, anti-competitive behaviour, and restrictive covenants in the DoT's approach to policy formulation and implementation. A host of problems encountered by new entrants in the areas of provision of resources and interconnection could have been avoided if the service provider function of the incumbent had been separated from the DoT, instead of allowing someone to be the judge of his own cause.

TRAI was set up much after liberalization was introduced. Even thereafter, the DoT showed scant consideration to the recommendatory functions mandated to TRAI under the TRAI Act, with regard to compliance of terms and conditions of licence, introduction of new service providers, revocation of a licence, and dispute settlement. In fact, the DoT resorted to litigation by challenging the scope of the provisions of the TRAI Act to keep the regulator from discharging its functions. Even the Delhi High Court ruling on the DoT's challenge of these provisions at the first appellate stage went against TRAI. A large number of disputes between the DoT and service providers are pending a final verdict of the court on jurisdictional issue as the matter is now sub judice before the division bench of the high court.

Defining the regulator's role

During its existence of less than two years, TRAI exhibited a high degree of independence and competence in regulating the sector by providing a level playing field among operators in the private and public sectors based on the principle of non-discrimination and control on anti-competitive practices by the players. The regulator is addressing the challenge of reconciling the public policy objective of consumer protection and affordability with that of adequate return on investments for the incumbent and the new entrants to ensure growth of the sector in the period of transition from monopoly to an open competitive market. Tariff rebalancing was identified as the priority area warranting reforms to foster competition, protect consumer interest, and bring efficiency in provision of services. The ongoing exercise in TRAI is a step in this regard to rationalize the tariff structure by making it cost-based with market-oriented pricing for all services, in an unbundled manner and with complete transparency. The new tariff structure would also provide scope for innovative ways of revenue generation by service providers, inject sustained viability in their operations, and encourage fresh investment for boosting development and strengthening the telecom network. This exercise has also flagged off a debate on the extent of subsidization of a class of subscribers and/or certain services beyond the USO (universal service obligation).

Other priority areas of work include building up an interconnection regime which promises seamless interconnection among networks on a non-discriminatory principle of access with regard to physical, technical, pricing, and other commercial aspects, including revenue sharing. A model framework for interconnection is in the offing. The regulator has also embarked upon consultations in other areas such as quality of service and customer satisfaction, and accounting separation and recommendatory functions such as the terms and conditions of a licence agreement. These steps are directed towards providing a world-class regulatory regime.

There is an urgent need to strengthen TRAI and delineate its role with comprehensive powers and clear authority to enable it to perform effectively in ensuring rapid development and enhancement in the communication sector. Ambiguities, if any, arising out of different interpretations of some of the provisions of the TRAI Act need to be sorted out through appropriate amendments in the Act. In case the licensing function continues with the DoT, the power for adjudication over dispute between the licensor and the licensee must be vested in TRAI to generate investor confidence. The government must mandatorily seek TRAI's recommendations on various policy issues and matters related to the development of the telecommunications industry even if such recommendations are not binding on the government. These issues are currently being debated in the context of the new telecom policy under consideration by the government.

Convergence of technology and policy framework

Apart from the constraints in effective roll-out of the telecom network, there have been recent far-reaching developments worldwide in the telecom, IT (information technology), broadcasting, and media industry. The convergence of markets and technologies is forcing a realignment of the industry. Telecom and broadcasting industries are encroaching upon each other's territories and technology is blurring the difference between various conduit systems such as wireline and wireless. The growing trend of transmitting data in digital form is leading to a convergence that makes the distinction between voice, fax data, video, and other forms less relevant as all are carried over the same networks. As in many other countries, separate licences have been issued for basic, cellular, Internet, GMPCS, and cable TV operators each with separate industry structure, terms of entry, and obligations for creating the infrastructure. The convergence, however, permits operators to use their facilities to deliver some of the services reserved for other operators. This warrants another look at the policy framework. Any new telecom policy framework must facilitate India's vision of becoming an IT superpower. It should expedite the development of a world-class telecom infrastructure in the country that can provide a modern, efficient, competitive, and innovative environment for the industry, leading the way for many new social and economic opportunities, which also take into account possibilities emerging from rapid technological changes. Incidentally, a draft paper on the New Telecom Policy, 1999 was released by the government on 23 January 1998 for eliciting wider public debate before the new policy is formulated.

Scope of universal service obligation

There is the need to redefine the precise scope of the USO so that connectivity is rapidly provided to all uncovered areas apart from the provision of high-level services (such as Internet and Integrated Services Digital Network) capable of meeting the demands of the country's expanding economy. An appropriate funding mechanism must also be devised to ensure the availability of resources for meeting the USO.
A new policy framework must recreate the environment that is capable of attracting the required levels of substantial investment for accomplishing the projected growth on all fronts of service segments.

Spectrum management

Allocation of frequency spectrum and the current procedures for obtaining security clearances have been the other major bottlenecks in delayed commissioning of various projects. This area needs drastic reforms with a transparent process of spectrum allocation along with a complete review of procedures and relocation of the existing frequencies. The proliferation of new technologies would further increase the demand on the spectrum. In fact, spectrum management can be better handled if it is assigned to an independent agency like the regulator.

Licensing

Licensing of operators is another area that needs substantive reforms. The policy of inviting bids for the issue of licences for the cellular and basic telephone services has revealed its pitfalls. High upfront licence fees have created problems of viability and survival of service providers, adding to the difficulties encountered in effecting financial closure. The entire mechanism of licensing needs an extensive public debate to thrash out whether the country needs unreasonable licence fees from the operators (in lieu of operational rights given to them for providing services) to meet the budgetary deficit and thereby increase the cost of service to the subscribers. If at all the licence fee has to be levied, should it not be limited to the extent of the costs involved in administering the licence or some reasonable share of revenues to the operator? Alternative licensing options will have to be explored, which may include segmentation of services and markets by linking investment opportunities and applications. While the system of licensing may continue for infrastructure providers, free entry for service providers especially in the access network would perhaps be a better option to give impetus to competition and growth of services.

The extent of competition and the number of operators required in each service area are relevant parameters to decide the terms and conditions of the licence. The structure of the present licence agreement and licence fee has to change as it is not a suitable instrument for infrastructure development. Any future licences must be issued only after the licensing policy is reviewed on these lines. Simultaneously, the problems faced by the existing licensees should be satisfactorily resolved in a legally tenable manner that is consistent with the contractual obligations and does not threaten their sustenance.

Concerns for the regulator

Regulatory concerns with regard to market structure, competition and licensing, resource allocation, pricing, tariff, quality of service, interconnection, USO, and dispute resolution will have to be appropriately addressed not only at the policy level but also at the institutional and implementation levels. This transition has to be regulated in a manner that averts unmanageable upheavals in the existing market structure. At the same time, it is relevant to recognize that the country cannot afford to perpetually lag behind if a gradual curve for introduction of competition is traced. Learning from the experience of other countries, we must now move on a fast track to leapfrog in our endeavour to establish a world-class telecom infrastructure in India.

Opportunities for investment

Low tele-density of about 2 telephone lines for every 100 persons and the vast under-serviced population offer tremendous scope for fresh investment in the telecom sector in India. Each per cent increase in tele-density is expected to effect three per cent increase in gross domestic product growth. In its continuing endeavour to expand the network coverage and to provide new services, the DoT recently formulated a 10-year perspective plan (1997–2007). To meet the objective of providing telephones on demand, this perspective plan has forecast an additional demand of 67.4 million DELs during the period 1997–2007 maintaining the past average growth rate. It is assumed that the private sector will supply 20.4 million lines of this additional demand and the balance 47 million DELs will be installed by the DoT. Accordingly, the perspective plan envisaged an investment requirement of the magnitude of 55 billion dollars for increasing the tele-density to nine per cent at the end of the 10-year period. Apart from internal resources to be ploughed in by the DoT, investment of about 25 billion dollars is anticipated from the private sector for extending the coverage of basic service networks. Additional requirement of funds for providing value-added services has not been quantified.

The financial plight of new entrants in India does not offer much comfort to investors in putting fresh capital at stake. In fact, the continued financial unviability of these service providers extending even beyond their normal gestation period and prolonged delays in corrective policy actions have affected inflow of fresh investment. The high upfront licence fee is cited as the major factor contributing to the financial unviability of a large number of new entrants. For bringing in increased investment for the country, new entrants in the private sector have to be strengthened. Radical policy modifications have to be in position at the earliest, not only in terms of bailout packages for the existing new entrants but also in reinforcing the market environment that improves viability in this sector and facilitates the much-needed inflow of private capital. The competition will, in the long run, benefit consumers and bring in higher tax revenues to the GoI from increased telecom activity.

Annex 1

Table 1 Status of service providers[a] as on 31 December 1998

Name of service	No. of licences issued	Service started
Basic	6	2
Cellular	42	39
Radio paging	137	93
PMRT[b]	103	57
Data network	12	10
Voice mail	11	6
E-mail	15	15
Internet	45	1
GMPCS[c]	1[d]	–

[a] other than the Department of Telecommunications and the Mahanagar Telephone Nigam Limited; [b] paging and public mobile radio trunking; [c] Global Mobile Public Communication System; [d] issued provisionally

Growth in the telecom sector

Basic services

Total PSTN (public switched telephone network) installed capacity: 20 million
PSTN working lines: 17 million
Average growth during last five years: 15%
Tele-density (no. of telephones per 100 persons): 1.92%
Growth in demand: 16.3%
Percentage digitalization: 97.6%
Lines with STD facility: 92%
Rural exchange lines: 2.8 million
Rural penetration: 0.3%

Two circles, Maharashtra and Madhya Pradesh, have two basic operators

Cellular services

No. of licences issued: 42
Service started: 39
Number of cellular subscribers: 1 035 813

Table 2 List of private basic service providers

Name of the service provider	Circle of operation
Reliance Telecom Pvt. Ltd	Gujarat
Bharti Telenet Ltd	Madhya Pradesh
Hughes Ispat Ltd	Maharashtra
Tata Teleservices	Andhra Pradesh
Essar Comvission Ltd	Punjab
Shyam Telelink Ltd	Rajasthan

Coal Deregulation

Coal and lignite

At a glance

- India's proven coal reserves of 82 396 MT (million tonnes) constitute seven per cent of total world proven reserves. Lignite reserves in the country have been estimated at 30 322 MT.
- India produced about 300 MT of coal and 22 MT of lignite in 1999/2000, and is the third largest coal producer in the world.
- National coal companies account for 98% of the country's coal production of which the Coal India Limited accounts for 88% and Singareni Collieries Company Limited for 10%.
- Indian coal has high ash content and low calorific value. The quality has declined further with increase in opencast mining.
- Washing of coal (to separate ash and coal) is difficult due to the presence of near gravity impurities. Also the existing coking coal beneficiation facilities are old and have low unit capacity.
- Given the limited scope for beneficiation, users of prime coking coal are compelled to turn to imports. Non-coking coal has also begun to be imported on the grounds of transportation logistics as well as against export entitlements. Over 15.6 MT of coal was imported in 1998/99.
- Though productivity (in terms of OMS [output per man-shift]) has improved considerably, particularly in opencast mines, the OMS in India is still less than one-twentieth that in Germany and USA.
- The pricing and distribution of all coal and coal products were deregulated in phases and the process was completed on 1 April 2000.

Reserves and production

The Geological Survey of India has estimated India's proven coal reserves at 82 396 MT (million tonnes), which was approximately seven per cent of the total world proven reserves as on 1 January 2000 (Table 1.01). India's total coal reserves are estimated at 211 594 MT, of which nearly 86% are non-coking coal reserves (Table 1.02).

Lignite reserves in the country have been estimated at 30 322 MT. Of this, 26 753 MT is in Tamil Nadu and Pondicherry, the rest in Gujarat and Rajasthan with small quantities in Kerala and Jammu and Kashmir (Table 1.03).

India is the third largest coal producer in the world. The CIL (Coal India Limited) and its subsidiaries are the major producers of coal, contributing approximately 86% of the coal produced in India. Through a sustained programme of investment and greater application of modern technologies, it has been possible to raise the production of coal from 100 MT in 1975/76 to 300 MT in 1999/2000.

The demand for energy is rising by the day, and the issue of energy security is paramount in the coal industry. Thus, it is important to address issues regarding the exploitation technologies and quality of coal mined, adequacy of environmental and resource utilization policies, and the legislative set-up for the sector.

Location and quality of resources

The major coalfields of the country are situated in Bihar, West Bengal, Assam, Madhya Pradesh, Orissa, Maharashtra, Andhra Pradesh, and some parts of Uttar Pradesh.

Indian coal is generally of low quality with high ash content and low calorific value. It exists predominantly in thick seams (approximately 70% of coal reserves are locked up in seams over 3.5-m thick and of this, 58% is in seams over 5-m thick) interbanded with extraneous matter. These seams are also complex with a multiplicity of coal horizons (20–25 in Jharia, 30–36 in Karanpura, and 10 in Raniganj).

Since some of the major consumption sites are located at a distance from the reserves, an enormous burden is placed on the transport infrastructure (Map 1).

The best quality of metallurgical coal is found in the mines of Jharia (Bihar) and in some mines in Raniganj (West Bengal). Before nationalization, mines in these areas were subjected to large-scale indiscriminate exploitation. As a result, the area is heavily built-up, and millions of tonnes of good quality coal has been left in pillars. Large areas of the Jharia and Raniganj mines have fires raging in them. Thus, mining coals in these areas is complicated, and the production of coal has steadily declined over the past few years.

The potential areas and new finds with good quarriable prospects, identified during the Eighth Plan period, are located in East Bokaro, South Karanpura, and Sohagpur coalfields for metallurgical coal; Birbhum, Sohagpur, Mand–Raigarh, Tatapani–Ramkola, and Korba for superior grade non-coking coal; and Talcher, Korba, Rajmahal, and Auranga coalfields for inferior grade non-coking coal.

The quality of power grade coal has deteriorated over the years. The power plants largely receive E, F, and G grade coals containing large amounts of ash and shale. As per the notification of 19 September 1997, power plants located in urban centres, sensitive areas, or critically polluted areas, or more than 1000 km from the source of supply are not to use coal with more than 34% ash content. This order is already applicable to some of the power stations in the vicinity of Delhi and Mumbai. Since adequate quantity of the requisite quality of coal is not available domestically, some consumers have already begun to import coal.

With regard to the issue of beneficiation of coal, washing of Indian coal is difficult because it contains near gravity impurities, making it hard to separate the ash from coal. As per the Altekar Committee recommendations, the desired level of average ash content in the washed coking coal for steel plants is 17% (±0.5%). The existing washeries were expected to modify and retrofit their equipment to maintain the desired level of ash. However, this has not happened, and the steel industry has become increasingly dependent on imports.

The quality can possibly be improved by blending imported and domestic coal. However, the infrastructure requirements for blending coal may be a constraint with the existing consumers. Selective mining using surface miners has shown great potential for improving quality in a couple of mines. This needs to be implemented on a large scale to be effective.

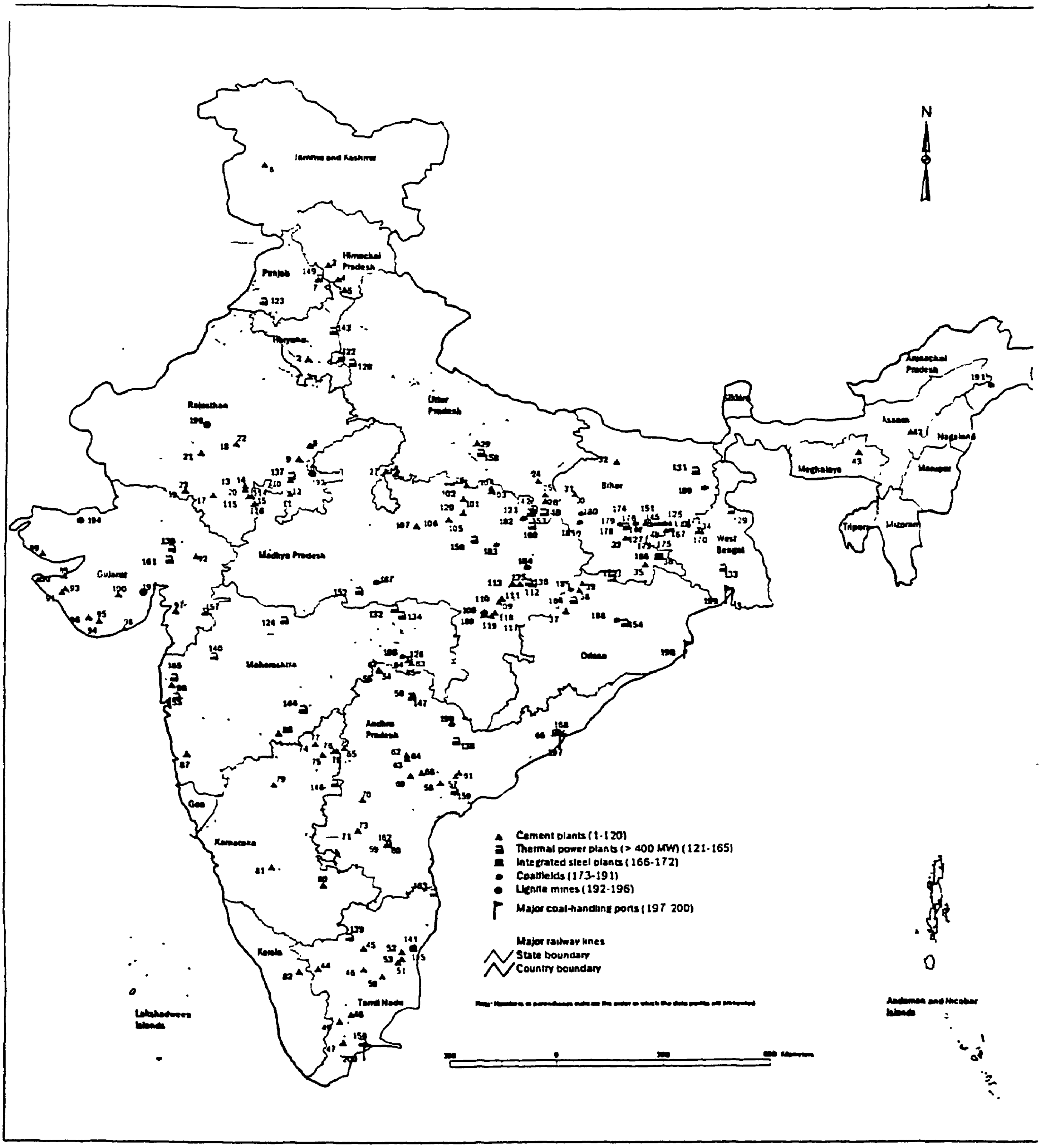
Demand estimates and production targets

The Planning Commission had assessed the demand for coal at 412 MT in 2001/02, 545 MT in 2006/07, and 775 MT in 2011/12 (corresponding to the low hydro-generation and high liquid-fuel-based generation of power) (*Ninth Five-Year Plan 1999–2002*). The corresponding production levels were estimated at 370.6 MT, 499 MT, and 672 MT for the respective years. This demand was reassessed at 370.80 MT (excluding 7.70 MT of middlings) for 2001/02 during the mid-term reassessment of the Ninth Plan. The overall indigenous coal production was also revised to 359.60 MT for 2001/02. The demand estimated for each year of the Ninth Plan is given in Table I.

Table I Annual demand as assessed by the Planning Commission for the Ninth Five-Year Plan

Year	*Demand* (million tonnes)
1997/98	323.40 (6.80)
1998/99	325.38 (7.50)
1999/2000	311.83 (3.00)
2000/01	333.85 (5.02)
2001/02	370.80 (7.70) (provisional)

Note Figures in parentheses are for middlings
Source Ministry of Mines and Minerals (1999)



Map 1 Coalfields and coal consuming industries (August 2000)

Sources
1 Survey of India, Dehra Dun
2 Central Electricity Authority, New Delhi
3 Central Board for Irrigation and Power, New Delhi
4 Coal India Limited, Calcutta
5 Cement Manufacturer's Association, New Delhi

Facing page no. 24

Map 1. Coalfields and coal consuming industries (data)

Cement plants: location and capacity

Sl no.	*Cement plants*	*Location*	*Capacity (thousand tonnes)*
1	CCI Ltd	Tughlakabad, Delhi	500
2	CCI Ltd	Charkhi Dadri, Bhiwani, Haryana	172
3	ACC Ltd	Barmana, Bilaspur, Himachal Pradesh	1938
4	Guj Ambuja	Darlaghat, Solan, Himachal Pradesh	960
5	CCI Ltd	Rajban, Sirmaur, Himachal Pradesh	200
6	J&K Cements	Khrew, Baramullah, Jammu & Kashmir	200
7	Guj Ambuja	Ropar, Roopnagar, Punjab	1040
8	Jaipur Udyog	Sawai Madhopur, Rajasthan	1000
9	ACC Ltd	Lakheri, Bundi Rajasthan	322
10	Shriram Cement works	Sriramnagar, Kota, Rajasthan	200
11	Manglam Cement	Morak, Kota, Rajasthan	400
12	Neer Shree	Morak, Kota, Rajasthan	700
13	Birla Cement works	Shambhupura, Chittorgarh, Rajasthan	1000
14	Chittor Cement Works	Chittorgarh, Rajasthan	1400
15	JK Cement works	Nimbahera, Chittorgarh, Rajasthan	1540
16	J K Cement Works	Mangrol Kota, Rajasthan	210
17	JK Udaipur Udyog	Shaktinagar Udaipur, Rajasthan	900
18	Shree Cement	Bangur Nagar, Beawar, Rajasthan	3500
19	Lakshmi Cement	Banas/Sirohi road, Sirohi, Rajasthan	2230
20	Aditya Cement	Shambhupura, Chittorgarh, Rajasthan	1000
21	DLF Cement	Rabriyawas, Pali, Rajasthan	1400
22	Raj Cement	Beawar, Rajasthan	1240
23	Binani Cement	Sirohi, Rajasthan	1650
24	UP state Cement Corp.	Chunar, Mirzapur, Uttar Pradesh	1680
25	UP state Cement Corp.	Churk, Sonebhadra, Uttar Pradesh	475
26	UP state Cement Corp.	Dalla, Sonebhadra, Uttar Pradesh	432
27	Diamond Cement	Jhansi, Uttar Pradesh	500
28	ACC Ltd	Tikaria, Banda, Uttar Pradesh	600
29	Birla Cement	Raebareli, Uttar Pradesh	360
30	Kalyanpur Cement	Banjari, Rohtas, Bihar	1000
31	Rohtas Industries Ltd	Dalmianagar, Rohtas, Bihar	620
32	Sone Valley Portland	Japla, Patna, Bihar	254
33	Khalari Cement	Khalari, Ranchi, Bihar	109
34	ACC Ltd	Sindri, Dhanbad, Bihar	305
35	ACC Ltd	Jhinkpani, Singhbhum, Bihar	635
36	TISCO	Jojobera, Tatanagar, Bihar	1430
37	IDCOL Cement Ltd	Bardol, Bargarh, Orissa	960
38	L&T Cement	Jharsuguda, Sambalpur, Orissa	700
39	OCL India	Rajgangpur, Sundergarh, Orissa	1001
40	Damodar Cement	Madhukunda, Purulia, West Bengal	270
41	Birla Corp. Ltd	Durgapur, West Bengal	600
42	CCI Ltd	Bokajan, Karbi-Anglong, Assam	200
43	Mawmluh Chera Cement	Cherrapunji, Shillong, Meghalaya	200
44	ACC Ltd	Madukkarai, Coiambtore, Tamil Nadu	810
45	India Cements Ltd	Sankari west, Salem, Tamil Nadu	600
46	Chettinad Cement	Puliyur/Karur, Trichy, Tamil Nadu	600
47	India Cements Ltd	Talaiyuthur/Shankarnagar, Nellai Kattabo, Tamil Nadu	1100
48	TN Cements Corp.	Rajapalayam/Alangulam, Kamarajar, Tamil Nadu	400
49	Madras Cements Ltd	Virudhunagar/RS Rajanagar, Kamarajar, Tamil Nadu	750
50	Dalmia Cements (B) Ltd	Dalmiapuram, Truchirapally, Tamil Nadu	1030
51	TN Cements Corp.	Ariyalur, Trichy, Tamil Nadu	500
52	Madras Cements Ltd	Pennadam/Alathiyur, South Arcot, Tamil Nadu	900
53	India Cements Ltd	Dalavoi, Perambudur, Tamil Nadu	900
54	ACC Ltd	Mancherial, Adilabad, Andhra Pradesh	340
55	Orient Cement	Mancherial, Adilabad, Andhra Pradesh	1180
56	Kesoram Cements	Ramagundam, Karimnagar, Andhra Pradesh	900
57	Andhra Cements	Vijaywada, Andhra Pradesh	240
58	Kistna Cement	Kistna, Guntur, Andhra Pradesh	214
59	India Cements Ltd	Yerraguntla, Cuddaph, Andhra Pradesh	500
60	India Cements Ltd	Chilamkur, Cuddapah, Andhra Pradesh	1000
61	Madras Cements	Jayantipuram, Krishna, Andhra Pradesh	1100
62	Raasi Cement	Vishnupuram/Wadapally, Nalgonda, Andhra Pradesh	1800
63	Priyadarsani Cement	Kodad/Ramapuram, Nalgonda, Andhra Pradesh	600
64	Sri Vishnu Cement	Dondapadu/Sitapuram, Nalgonda, Andhra Pradesh	1000
65	CCI Ltd	Tandur, Rangareddy, Andhra Pradesh	1000
66	Andhra Cements	Vishakhapatnam, Andhra Pradesh	500
67	CCI Ltd	Adilabad, Andhra Pradesh	400
68	Andhra Cements	Dachepalli/Nadikude, Guntur, Andhra Pradesh	500
69	KCP	Macherla, Guntur, Andhra Pradesh	400
70	Panyam Cements	Bugganipalle, Kurnool, Andhra Pradesh	531
71	L&T Cements (AP)	Tadpatri, Anantapur, Andhra Pradesh	2000
72	India Cements	Tandur, Rangareddy, Andhra Pradesh	900
73	Zuari Cement	Tadpatri, Anantapur, Andhra Pradesh	1700
74	HMP Cements Ltd	Shahabad Gulbarga, Karnataka	476
75	ACC Ltd	Wadi, Gulbarga, Karnataka	2005
76	Vasavadatta Cement	Sedam, Gulbarga, Karnataka	500
77	Rajashree Malkhed	Malkhed, Gulbarga, Karnataka	2000
78	CCI Ltd	Kurgunta, Gulbarga, Karnataka	200
79	Kanoria Inds Ltd	Bagalkot, Bijapur, Karnataka	330
80	Mysore Cements Ltd	Amasandra, Tumkur, Karnataka	570
81	Visvesvaraya	Bhadrawati, Bhadrawati, Karnataka	100
82	Malabar Cements Ltd	Palghat, Palghat, Kerala	420
83	L&T Cements	Korpana/Awarpur, Chandrapur, Maharashtra	2550
84	Manikgarh Cement	Korpana/Manikgarh, Chandrapur, Maharashtra	1500
85	ACC Ltd	Chanda, Chandrapur, Maharashtra	620
86	Shree Digvijay	Sewree, Raigarh, Maharashtra	200
87	Narmada Cement	Zadgaon, Ratnagiri, Maharashtra	333
88	Rajashree Hotgi	Hotgi, Sholapur, Maharashtra	1200
89	Shree Digvijay	Sikka, Jamnagar, Gujarat	1025
90	Dwarka	Dwarka, Dwarka, Gujarat	277
91	HMP Cements Ltd	Porbandar, Porbandar, Gujarat	198
92	Sevalia	Sevalia, Kheda, Gujarat	215
93	Saurastra Cement	Ranavav, Gujarat	1164
94	Ambuja Cement	Kodinar, Amreli, Gujarat	1000
95	Guj. Ambuja	Kodinar, Amreli, Gujarat	2000
96	Gujarat Sidhee	Tal-Veraval, Junagarh, Gujarat	1200
97	Narmada Cement	Magdalla, Surat, Gujarat	667
98	Narmada Cement	Jafrabad, Amreli Gujarat	400
99	Tata Chemicals	Mithapur, Jamnagar, Gujarat	440
100	L&T Cem	Pipavav, Amreli, Gujarat	4000
101	Satna Cement Works	Satna, Madhya Pradesh	750
102	Birla Vikas	Satna, Madhya Pradesh	800
103	Jaypee Cement	Jaypee nagar, Rewa, Madhya Pradesh	2500
104	Jaypee Cement	Bela, Rewa, Madhya Pradesh	1500
105	Maihar Cement	Maihar, Satna, Madhya Pradesh	2000
106	ACC Ltd	Kymore, Panna, Madhya Pradesh	1400
107	Diamond Cement	Narsingarh, Damoh, Madhya Pradesh	1025
108	ACC Ltd	Bilaspur/Jamul, Durg, Madhya Pradesh	1580

Map 1 continued

Sl no.	Cement plants	Location	Capacity (thousand tonnes)
109	CCI Ltd	Mandhar, Raipur, Madhya Pradesh	380
110	Century Cement	Tilda, Raipur, Madhya Pradesh	1200
111	Ambuja Cement Easter	Bhatapara, Raipur, Madhya Pradesh	1800
112	CCI Ltd	Akaltara, Bilaspur, Madhya Pradesh	400
113	Raymond Ltd	DGopalnagar/Akaltara, Bilaspur, Madhya Pradesh	2240
114	Vikram Cement	Jawad Road, Mandsaur, Madhya Pradesh	1500
115	Vikram Super Cement	Jawad Road, Mandsaur, Madhya Pradesh	1000
116	CCI Ltd	Neemuch, Mandsaur, Madhya Pradesh	400
117	TISCO	Sonadih, Raipur, Madhya Pradesh	300
118	L&T Cements	Simga/Hirmi, Raipur, Madhya Pradesh	1450
119	Grasim Cement	Grasimvihar, Raipur, Madhya Pradesh	1800
120	Prism Cement	Maihar, Satna, Madhya Pradesh	2000

Thermal power plants (coal-based): location and capacity

Sl no.	Location	Capacity (MW)
121	Anpara, Uttar Pradesh	1630
122	Badarpur, Delhi	420
123	Bhatinda GNDT, Punjab	440
124	Bhusawal, Maharashtra	420
125	Bokaro A & B, Bihar	630
126	Chandrapur STPS, Maharashtra	1840
127	Chandrapura, Bihar	620
128	Dadri, Uttar Pradesh	840
129	Farakkaha STPS, West Bengal	1600
130	Gandhinagar, Gujarat	660
131	Khalgaon, Bihar	840
132	Khaparkheda, Maharashtra	420
133	Kolaghat, West Bengal	1260
134	Koradi, Maharashtra	880
135	Korba STPS, Madhya Pradesh	2100
136	Korba West, Madhya Pradesh	840
137	Kota, Rajasthan	850
138	Kothagudem, Andhra Pradesh	430
139	Mettur, Tamil Nadu	840
140	Nasik, Maharashtra	·910
141	Neyveli, Tamil Nadu	1770
142	Obra, Uttar Pradesh	1000
143	Panipat, Haryana	750
144	Parli, Maharashtra	630
145	Patratu, Bihar	430
146	Raichur, Karnataka	650
147	Ramagundam, Andhra Pradesh	2100
148	Rihand, Uttar Pradesh	2000
149	Ropar, Punjab	1050
150	Sanjay Gandhi, Madhya Pradesh	630
151	Santhaldih, Bihar	480
152	Satpura Sarni, Madhya Pradesh	830
153	Singrauli STPS, Uttar Pradesh	1000

Continued...

Sl no.	Location	Capacity (MW)
154	Talcher, Orissa	1220
155	Trombay, Maharashtra	1150
156	Tuticorin, Tamil Nadu	1050
157	Ukai, Gujarat	850
158	Unchahar, Uttar Pradesh	630
159	Vijaywada, Andhra Pradesh	1260
160	Vindhyachal, Madhya Pradesh	1760
161	Wanakbori, Gujarat	1260
162	Cuddapah, Andhra Pradesh	420
163	North Madras, Tamil Nadu	630
164	Ib Valley, Orissa	420
165	Dahanu, Maharashtra	500

Location of iron and steel plants

Sl no.	Location
166	Jamshedpur
167	Bokaro A&B
168	Vishakhapatnam
169	Bhilai
170	Burnpur
171	Durgapur
172	Rourkela

Location of major coalfields

Sl no.	Location
173	Raniganj
174	Jharia
175	East Bokaro
176	West Bokaro
177	Ramgarh
178	South Karanpura
179	North Karanpura
180	Daltonganj
181	Hutar
182	Singrauli
183	Sohagpur
184	Korba
185	Ib river
186	Talcher
187	Pench-Kanhan
188	Wardha valley
189	Rajmahal
190	Godavari
191	Makum, Namchik-Namphuk

Location of lignite mine

Sl no	Location
192	Padundaro, Gujarat
193	Mangrol Rajasthan
194	Bhavnagar Gujarat
195	Birsinghpur, Rajasthan
196	Neyveli Tamil Nadu

Location of major coal trading ports

Sl no	Location
197	Paradip
198	Haldia
199	Vishakhapatnam
200	Tuticorin

Compared with the domestic availability, the projected demand for coal reveals a large demand-supply mismatch. Unless domestic production is augmented, large quantities of coal would have to be imported, and a huge amount would be lost as foreign exchange outgo. Investment required for increasing domestic production to meet the Ninth Plan projections is estimated to be over 200 billion rupees. Major policy changes are needed to get the best returns from this investment. The following measures are important in this regard.

- Improve the productivity of coal mines particularly that of underground mines. The OMS (output per man-shift) is very low in India when compared with international standards (see below).
- Clear factors that cause delays in opening new mines, such as environmental clearance, labour problems, problems of land acquisition, and rehabilitation of oustees.
- Deregulate coal prices such that they reflect the relative availability, substitutability, and calorific values of competing fuels.
- Make necessary legislative changes to the existing legal framework to facilitate private sector participation in coal production and distribution.
- Create regulatory mechanisms such that coal mines are properly and systematically developed and exploited and different grades of coal are appropriately priced.
- Persuade end-users to adopt proper demand management measures to reduce the need for capacity addition.

Mining technology

In India, mining technology shifted rapidly in favour of opencast mining over the last two decades. The increase in overall coal production over the period has mainly come from increased production from opencast mines. The Ninth Plan envisaged that 75% of the total projected production would come from opencast mines and the rest from underground mines.

In spite of substantial investments, the productivity of underground mines has not improved much due to difficult mining conditions, low levels of skill, and a large workforce. Immediate action, therefore, needs to be initiated to develop underground mines, which have a large potential for meeting the future demands, in view of their long gestation periods.

During extraction of coal through opencast mining, overburden and extraneous matter are mixed with the coal. Thus, with increase in opencast mining, the quality of coal has been found to deteriorate. To counter this problem, surface miners have been used in some mines of Ib Valley coalfield and they have been successful in extracting coal with a minimum level of extraneous matter. Surface miners extract slices of coal in 15–23 cm thick layers, which facilitates the segregation of layers that do not contain shale.

Productivity or overall OMS has improved during the last decade for the CIL and the SCCL (Singareni Collieries Company Limited) group of companies. The overall productivity is 2.0 for the CIL and 1.3 for the SCCL. While the OMS for opencast mining has improved, the OMS for underground mining has either declined or stagnated (Table 1.14). In 1994, the US had an average of 37.5 tonnes per man-shift and the figure in Germany's Hambach lignite mine was 43 tonnes per man-shift. Thus, there is a large scope for improving productivity in Indian mines.

Movement of coal

Since most of the coal production is restricted to the eastern and south-eastern belt of the country and core consumers such as power and steel plants are often distant from the coalfields, transportation of coal to the consumers is a major consideration. The railways is the main mode of transportation followed by captive systems such as MGR (merry-go-rounds). Road transport, conveyors, and aerial ropeways are also used. About six per cent of India's domestic coal transport is seaborne. Coastal shipment is used for supplying coal to consumers in South India.

The freight of coal on the Indian railways is among the highest in the world. This is because it cross-subsidizes the freight of foodgrains, fertilizer, and passenger fare.

India has 11 major ports, which are managed by the Port Trust of India under the jurisdiction of the central government. Important ports on the eastern coast, namely Haldia, Paradip, and Vishakapatnam, as well as several minor and intermediate ports (most of them on the western coast) receive coal imports. Around 11 MT of coal is carried by rail over relatively short distances to these ports each year, to be shipped to the southern ports of Chennai and Tuticorin. Coal imports are also received at these ports.

The government recently allowed private sector participation in the development and augmentation of port facilities.

Reforms in the coal sector

Given the importance of coal and lignite resources in India's overall energy strategy and the urgent need to develop these resources, the Planning Commission constituted a Committee on Integrated Coal Policy, which submitted its report in May 1996. The major recommendations included adoption of coal conservation measures; augmentation of domestic coal production by involving the private sector, integrating the exploratory efforts for coal and lignite, deregulating of coal prices, creating a regulatory body to look into price disputes, etc.; setting up more pithead coal- or lignite-based thermal power stations; augmentation of the railways and port infrastructure facilities; and amending/modifying various acts to facilitate private sector participation and expedite project clearance procedures. Deregulation of prices and distribution of all grades of coal and coal products are the only recommendations implemented so far by the government. Other recommendations, reported to be under active consideration of the government, are given below.

- Permission to any Indian company to mine coal without the restriction of captive consumption.
- Establishment of a regulatory body to perform an appellate function to resolve any price disputes between producers and consumers.
- Setting up an independent body to monitor the detailed and regional exploration of coal and lignite resources in the country.
- Allocation of new blocks on the basis of a competitive bidding process in which Indian companies including national coal companies may participate.

Implementation of some of these recommendations would necessitate amendments to various statutes governing coal mining in the country.

Coal imports

Coal can be freely imported by consumers based on requirements and commercial judgements under the open general licence. Coking coal is imported by SAIL (Steel Authority of India Limited) and other steel manufacturers to bridge the gap between requirements and the indigenous availability and also to improve the quality of the overall blend. With the lowering of import duty and the increase in price of domestic coal consequent to deregulation of indigenous coal prices, a number of coal-based power plants and cement plants have also started importing non-coking coal on consideration of transportation logistics and against export entitlements. Imports of coking and non-coking coal are shown in Table 1.12. Non-coking coal imports rose from 4.53 MT in 1996/97 to 6.56 MT in 1997/98. It is possible that imports of non-coking coal during 1998/99 were even higher than the officially stated figures.

At a basic customs duty of 15%, imports of coal were favourable especially near the ports. Imports of non-coking coal increased since the decontrol of prices of higher grades of coal in March 1996 and of all grades from April 2000. To protect the domestic coal market, the basic import duty on coal was increased to 25% in May 2000. Non-coking coal imports also attract a 10% surcharge on the basic duty and a special additional duty of 4%. This is expected to make imports less remunerative and give an edge to the Indian coal producer over the producers overseas. The cement plants located near the coastal regions and the sponge iron plants (direct reduction process using higher grade non-coking coal) are expected to be most affected by this hike as they account for the bulk of hard coal imports.

Captive coal mining

After nationalization of the coal mines in 1972/73, the development of coal was confined to the public sector. But in the early 1990s, the government decided to allow private sector participation in the power sector to augment thermal power generation and to create additional thermal power capacity. The Coal Mines (Nationalization) Act, 1973 was amended on 9 June 1993 to allow captive consumption of coal for generation of power to meet the anticipated increase in demand of private power producers. Later, production of cement and washing of coal for captive use were added to the list.

As a result of the notification, 105 captive mining blocks with an estimated reserve of 27 563 MT were identified in the command area of the CIL. Though several public and private sectors parties were offered captive coal blocks for consumption for power generation, it failed to attract private investors as the blocks offered were of poor quality.

In April 2000, a bill proposing further amendment to the Coal Mines (Nationalization) Act, 1973 was prepared to open up coal mining to private companies. If passed, the new law will provide free mining for all, with certain conditions on location and the minimum size of the mines so that coordinated and scientific development can take place.

Pricing reforms

The administered pricing set-up was last revised on 17 June 1994. The price notification was subsequently amended in December 1995 to enhance the differential among run of mine, steam, and slack coal; in January 1996 to include loading and transportation charges in some cases; and in April 1996 to take into account the additional prices for coal produced from Ramagundam OCP (opencast project) (SCCL) and Rajmahal OCP (eastern coalfields Ltd). Prices of coking coal and superior grades (A, B, C) of non-coking coal were deregulated vide notification dated 22 March 1996 and the prices were revised by the CIL with effect from 31 March 1996. Subsequently, the government also decided to deregulate the prices of soft coke, hard coke, and D grade non-coking coal with effect from 12 March 1997. Further, the CIL and the SCCL were allowed to fix prices of E, F, and G grades of non-coking coal once every six months based on the formula proposed by the Bureau of Industrial Costs and Prices in its 1987 report. The price of coal produced by the CIL and the SCCL entails royalty, stowing excise duty, and a four per cent central sales tax.

On 1 April 2000, the pricing of coal became fully deregulated vide the Colliery Control Order, 2000. This order supersedes the Colliery Control Order, 1945 of the Essential Commodities Act, 1955 under which the central government was empowered to fix the prices of coal by grade and colliery.

Since deregulation, the price of coal with advantageous geographic location (e.g. Rajmahal) is being pegged at a higher rate than that facing competition (e.g. Talcher in Mahanadi Coalfields) from imported coal or other fuels (Table 1.28).

Coal beneficiation

Coking coal reserves in the country are limited and only two to three per cent of the total coal reserves fall into the prime coking category. Most of the coking coal is found in Bihar. The coal in Jharia has the highest coking property even though the ash content is inherently high at 21%. After suitable beneficiation, this coal, referred to as prime coking coal, can be used to produce coke of the quality required by steel plants. Coking coal in other coalfields can yield suitable coke only when blended with prime coking coal and it is termed medium coking coal.

Most of the coking coal washing plants in India are old and have low unit capacity. Of the 20 washeries currently in operation, only one has an annual output of over 1 MT of washed coking coal and three have individual outputs of less than 300 000 tonnes a year. In addition, capacity utilization is typically in the order of 50%–65% and is expected to decline to about 48% by the end of the Ninth Plan. The details on raw coal feed and clean coal production by washery are provided in Table 1.18. Two of the washeries, Kargali and Giddi, have been converted to wash non-coking coal. The CIL has been having problems in maintaining its contractual obligations relating to a 17% maximum ash content in the coking coal supplied to SAIL as specified in the Altekar Committee in 1994/95 (Planning Commission 1996). Due to high ash content in the coal supplied to the steel industry (greater than 17%), the import dependency for coking coal is steadily increasing.

A major part of non-coking coal in India occurs in thick interbanded seams and is of inferior quality. Due to the poor quality of non-coking coal received by power stations, fly ash disposal becomes a critical problem. However, the MoEF (Ministry of Environment and Forests) has made it mandatory to supply clean coal (34% ash content) to all power stations located beyond 1000 km from the coalfields and to those located in critically-polluted, sensitive, and urban areas with effect from 1 June 2001. Currently, about 37% (100 MT) of non-coking coal is transported to power plants located beyond 1000 km from the coalfields. Furthermore, under the current proposal, there would be a phased introduction of maximum 34% ash in power station feed between 2000 and 2004 with all new generating capacity constructed after June 2000 designed to use this fuel.

Despite having long-term targets for the construction of about 60 MT annual washing capacity for non-coking coal, the construction of washing plants has not kept pace with the increasing coal mining capacity. As a result, large quantities of raw coal are being transported to power stations placing a severe constraint on the country's bulk freight services' capacity.

The CIL has not set up any washery of its own, other than on BOO (build-own-operate) or BOOT (build-own-operate-transfer) basis, due to the large costs and gestation period involved. In view of this, the Coal Mines (Nationalization) Act, 1973 was amended and about 20 MT of capacity is under construction/planning in the private sector. The Government of Andhra Pradesh also selected this route for providing washed coal from the SCCL's mines with a call for BOO tenders for the construction of three 8000-tonnes-per-day washeries at Manguru, Rudrampur, and Yellandu. The progress, however, has been very slow.

Legislative framework

Coal exploration and mining in India is governed by the Mines Act, 1952; the Mines and Minerals (Regulation and Development) Act, 1957; the Coal Mines Regulation Act, 1957; the Coal Mines (Nationalization) Act, 1973; the Forest Conservation Act, 1980; and the Environment Protection Act, 1986. Opening of new mines and subsequent operations require statutory permission from the Department of Coal, the Director General of Mine Safety, the MoEF, the State Pollution Control Board, and the respective state governments.

A mining lease that allows for the development and exploitation of coal needs to be obtained before undertaking any mining operations. It is granted by the state government after it is approved by the Government of India under the Mines and Minerals (Regulations and Development) Act, 1957. Mining leases are granted for 30 years initially and are renewed for a period of 20 years with the government's approval. The lease is ordinarily subject to a ceiling of 10 square kilometres of area.

The legal and regulatory framework needs to reflect the policy of the government. Coal mining projects in India are required to address environmental and social issues. The Environment Action Plan, the Rehabilitation Action Plan, and the Indigenous People's Development Plan are now an integral part of any coal project. The revision of the legislative framework, however, has not kept pace with the evolving policy that aims at reducing the role of the government as a developer of resources. The legislative provisions, therefore, need to operate within a framework that is beneficial for the investors and provides accessibility to latest technologies in the coal industry.

Policy recommendations

In a liberalized economy, competition is the guiding factor for reliable product and services. Currently, 98% of coal is produced from national coal companies, of which 88% is produced by the CIL and 10% by the SCCL. As such, there is no competition in the industry.

Private sector participation needs to be facilitated so as to bring about competition among the coal producers and prevent cartelization. The necessary legislative changes have to be made to facilitate private sector participation in coal production and distribution. Even though some changes have been initiated, administrative procedures have to be further streamlined to expedite the necessary clearances and the required legislative changes (Sengupta 1999).

Delays in new projects due to paucity of funds can be reduced by forming joint ventures between the public and private sector coal companies and the concerned state government. This will not only help resolve procedural difficulties in project implementation but also overcome problems related to land acquisition, rehabilitation of people ousted from the land, and forest clearances. Joint ventures will lead to consumer satisfaction with regard to quality and assured supply of coal economically. Some of the independent power producers, for instance, may have the resources to take up mining but they may not have the expertise, in which case they may like to enter into equity participation with the existing coal companies. Similarly, public sector utilities, such as the National Thermal Power Corporation, may like to enter into equity participation with the coal producers like the SCCL and the CIL for their proposed pithead power stations. In addition, SAIL and other steel producers in the private sector may enter into joint ventures with the CIL for developing new coking coal mines instead of relying on imports for their future requirements.

Due to the pre-liberalization structure of the coal industry, with a high degree of concentration of reserves and assets with the nationalized producers, the infrastructure bottlenecks, and the statutory and legal barriers, the Indian coal sector may not operate under conditions of competitive price-setting over the medium term. Moreover, the transition from a monopoly to a competitive system requires balancing of interests of the various participants in the market. This implies that an independent regulatory body will be indispensable.

Conclusion

With the opening up of the economy and recent reforms, the market is likely to be driven more by the availability of alternative fuel choices and the competitiveness of fuel prices. Further, sectoral reforms and policies cannot be successful in isolation. Therefore, reforms in the coal sector must be examined within the overall context of an integrated energy policy for the country.

The Indian coal industry must look at the international scene for a wider perspective and cooperation and not just for importing technology. The difficult mining conditions, culture of workforce, and capability of absorbing scientific technology demand that we develop our indigenous methods for attaining sustainable development.

References

Ministry of Mines and Minerals. 1999
Annual Plan
New Delhi Ministry of Mines and Minerals.

MoC (Ministry of Coal) 1998
Annual Report 1997/98
New Delhi. Ministry of Coal, Government of India.

Ninth Five-Year Plan: 1997–2002 (Volume I)
New Delhi. Planning Commission, Government of India.

Ninth Five-Year Plan 1997–2002 (Volume II)
New Delhi: Planning Commission, Government of India.

Planning Commission. 1996
Report of the Committee on Integrated Coal Policy
New Delhi: Planning Commission, Government of India.

Sengupta S. 1999
A regulatory body for the liberalised coal sector
Economic and Political Weekly xxxiv(9): M-25–M-33

Table 1.01 Coal resources of states (million tonnes) 1 January 2000

State	*Proved*	*Indicated*	*Inferred*	*Total*
Andhra Pradesh	7,346	3,312	2,929	13,587
Arunachal Pradesh	31	11	48	90
Assam	259	27	34	320
Bihar	34,794	28,692	5,642	69,128
Madhya Pradesh	13,010	22,148	8,334	43,493
Maharashtra	4,149	1,323	1,605	7,077
Meghalaya	118	41	301	459
Nagaland	3	1	15	20
Orissa	11,140	22,755	16,554	50,449
Uttar Pradesh	766	296	0	1,062
West Bengal	10,779	10,894	4,236	25,909
Total	82,396	89,501	39,697	211,594

Source
MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

For more details, please see TEDDY ONLINE+ [Section: Coal (reserves)]

Table 1.02 Coal reserves by category (million tonnes): 1 January 2000

Types of coal	*Proved*	*Indicated*	*Inferred*	*Total*
Coking				
Prime coking	4,614	699	–	5,313
Medium coking	11,267	11,133	1,106	23,506
Blendable/semi-coking	482	904	222	1,608
Sub-total	16,364	12,735	1,328	30,427
Non-coking[a]	66,032	76,765	38,369	181,167
Total	82,396	89,501	39,697	211,594

[a] including coals of the north-eastern region

Source
MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

For more details, please see TEDDY ONLINE+ [Section: Coal (reserves)]

Table 1.03c Lignite reserves of states and union territories (million tonnes) 1998/99

State / Union Territory	*Geological reserves*
Tamil Nadu and Pondicherry	
Neyveli	3,300
Bahur	575
Jayamkondacholapuram	1,167
Mannargudi	19,500
East of Veeranam	1,422
Kudikadu	133
Micheal Patti	23
Meensuruti	458
Kulanchavadi	175
Rajasthan	1,828
Gujarat	1,505
Jammu and Kashmir	128
Kerala	108
Total	30,322

Source
MoC. 2000. *Annual Report 1999/2000* New Delhi: Ministry of Coal.

For more details, please see TEDDY ONLINE+ [Section: Coal (reserves)]

Table 1.04 All-India production of coal, lignite, and other derivatives (million tonnes): 1975/76 to 1999/2000

Items	*1975/76*	*1980/81*	*1985/96*	*1990/91*	*1991/92*	*1992/93*	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*	*1998/99*	*1999/00*
Coking coal	27.4	31.7	35.2	44.9	45.80	45.21	44.66	41.97	39.91	40.50	43.80	39.2	33.0
Non-coking coal	72.3	82.3	119.1	169.0	187.00	196.80	204.02	215.80	233.50	245.50	253.33	253.1	267.1
Total coal[a]	99.7	114.0	154.3	213.9	232.80	242.00	248.68	257.77	273.42	286.10	297.20	292.3	300.1
Lignite	3.0	5.1	8.0	14.1	15.99	16.62	18.10	19.31	22.15	22.60	23.10	23.4	22.1
Total coal and lignite	102.7	119.1	162.3	225.7	245.40	255.11	266.78	277.08	295.56	308.70	320.20	315.7	322.2
Soft coke	2.7	2.3	1.7	0.9	0.73	0.48	0.43	0.25	0.17	0.10	–	–	–
Beehive hard coke	0.8	0.6	0.3	0.1	0.17	0.13	0.12	0.08	0.06	0.10	0.10	–	–
By-product hard coke	0.6	0.4	0.3	10.2	10.48	10.60	10.58	10.93	10.86	11.00	10.60	10.8	11.4
Washed coal	11.4	11.6	10.9	11.2	12.50	12.80	12.14	11.75	11.92	10.90	10.00	9.7	9.1
Middlings	3.9	4.3	5.1	5.6	6.07	6.46	6.64	6.30	6.80	6.80	7.60	7.2	6.2
Total exports	0.4	0.1	0.2	0.1	0.11	0.13	0.10	0.12	0.09	0.10	0.10	–	–
Total imports	–	0.6	2.0	4.9	5.92	6.70	7.10	8.30	8.90	9.50	9.50	–	–

[a] includes Meghalaya figures for the unorganized sector

Source

CCO *Coal Directory of India* (various issues) Calcutta: Coal Controller's Organization, Ministry of Coal.

For more details, please see TEDDY ONLINE+ Section: [Coal (general, production, and despatch)]

Table 1.05 Coal production of various states (million tonnes): 1975/76 to 1999/2000

State	*1975/76*	*1980/81*	*1985/86*	*1990/91*	*1991/92*	*1992/93*	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*	*1998/99*	*1999/00*
Andhra Pradesh	7.4	10.1	15.7	17.7	20.6	22.5	25.3	25.7	25.0	28.7	28.9	27.3	29.6
Assam	0.6	0.6	0.9	0.7	1.0	1.1	1.2[a]	1.2[a]	0.8	0.8	0.7	0.6	0.6
Bihar	41.8	46.6	54.3	67.3	69.0	71.1	73.3	73.3	74.6	77.7	81.3	76.2	76.9
Madhya Pradesh	20.4	25.9	42.6	65.2	69.4	70.7	72.9	74.9	79.8	83.3	84.8	84.9	87.9
Maharashtra	3.7	5.8	11.6	16.9	18.9	19.7	20.5	21.1	22.8	24.9	26.2	25.3	27.7
Meghalaya	–	–	–	2.2	3.5	3.5	2.5	3.3	3.3[b]	–	–	–	–
Orissa	2.2	3.2	6.0	16.2	20.7	23.1	24.3	27.3	32.7	37.4	42.2	43.5	43.6
Uttar Pradesh	–	1.8	3.9	10.5	11.5	12.2	12.1	13.8	14.8	15.4	15.8	15.6	16.2
West Bengal	23.7	20.0	19.4	17.2	18.2	18.1	16.6	17.2	17.9	18.0	17.4	18.8	17.6
All-India	99.8	114.0	154.4	213.9	232.8	242.0	248.7	257.8	273.5	286.1	297.2	292.3	300.1

[a] includes Arunachal Pradesh and Meghalaya under the north-eastern coalfields

[b] figures for the unorganized sector

Source

CCO. ***Coal Directory of India*** **(various issues). Calcutta: Coal Controller's Organization, Ministry of Coal.**

For more details, please see TEDDY ONLINE + [Section: Coal (general, production, and despatch)]

Table 1.08 Coal production of various companies (million tonnes): 1993/94 to 1998/99

Company	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*	*1998/99*
Coal India Ltd						
Eastern Coalfields Ltd	22.61	24.85	27.80	29.65	27.44	27.16
Bharat Coking Coal Ltd	29.04	28.75	27.81	27.14	30.92	27.18
Central Coalfields Ltd	33.51	31.21	30.76	32.21	33.10	32.18
South-Eastern Coalfields Ltd	47.53	50.00	53.17	55.30	56.63	57.56
Mahanadi Coalfields Ltd	24.29	27.33	32.70	37.37	42.16	43.51
Western Coalfields Ltd	26.50	27.24	29.01	31.23	32.51	31.74
Northern Coalfields Ltd	31.41	32.50	35.20	37.01	37.56	36.52
North-Eastern Coalfields	1.20	1.19	0.82	0.75	0.69	0.64
Total	216.10	223.07	237.28	250.65	261.01	256.49
Singareni Collieries Company Ltd	25.28	25.65	26.77	28.73	28.94	27.33
Jammu and Kashmir Minerals Ltd	0.02	0.02	0.02	0.02	0.01	0.01
Damodar Valley Corporation	0.07	0.29	0.23	0.29	0.36	0.37
Bengal Emta Coal Mines Ltd	–	–	–	–	0.71	1.80
Bihar State Mineral Development Corporation Ltd	–	–	–	0.26	0.20	0.19
Indian Iron and Steel Company Ltd	0.72	1.04	0.99	0.86	0.72	0.84
Tata Iron and Steel Company Ltd	3.96	4.16	4.90	5.30	5.23	5.22

Source

CCO. *Coal Directory of India* (various issues). Calcutta: Coal Controller's Organization, Ministry of Coal.

Table 1.09 Coal despatches of various companies (million tonnes): 1993/94 to 1998/99

Company	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*	*1998/99*
Coal India Ltd						
Eastern Coalfields Ltd	22.19	24.22	25.81	28.04	26.64	25.54
Bharat Coking Coal Ltd	28.54	28.34	26.55	26.75	27.57	26.83
Central Coalfields Ltd	33.02	31.18	30.84	31.19	32.49	31.98
South-Eastern Coalfields Ltd	46.91	47.81	52.27	56.12	58.33	56.93
Mahanadi Coalfields Ltd	24.00	26.93	34.36	37.22	43.40	41.76
Western Coalfields Ltd	25.52	27.26	30.37	30.91	31.35	30.44
Northern Coalfields Ltd	32.37	32.92	35.07	37.09	37.47	35.46
North-Eastern Coalfields	0.75	0.83	1.03	0.83	0.57	0.70
Total	213.30	219.49	236.29	248.15	257.82	249.63
Singareni Collieries Company Ltd	24.60	25.04	24.87	28.82	29.02	26.71
Jammu and Kashmir Minerals Ltd	0.02	0.02	0.02	0.02	0.01	0.01
Damodar Valley Corporation	0.07	0.27	0.23	0.29	0.36	0.33
Bengal Emta Coal Mines Ltd	–	–	–	–	0.69	1.78
Bihar State Mineral Development Corporation Ltd	–	–	–	0.26	0.19	0.20
Indian Iron and Steel Company Ltd	0.68	1.03	1.00	0.87	0.73	0.81
Tata Iron and Steel Company Ltd	3.94	4.28	4.91	5.29	5.20	5.21

Source

CCO. *Coal Directory of India* (various issues). Calcutta: Coal Controller's Organization, Ministry of Coal.

Table 1.10 Coal pithead stock of various companies (million tonnes): 1993/94 to 1998/99

Company	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*	*1998/99*
Coal India Ltd						
Eastern Coalfields Ltd	6.55	6.17	7.21	5.19	5.09	5.90
Bharat Coking Coal Ltd	13.29	8.02	8.56	8.26	10.95	4.76
Central Coalfields Ltd	11.51	11.13	10.57	11.21	11.03	10.91
South-Eastern Coalfields Ltd	7.07	8.80	9.22	7.89	6.01	6.27
Mahanadi Coalfields Ltd	4.82	5.15	3.40	3.48	2.29	4.00
Western Coalfields Ltd	3.52	3.15	1.44	1.43	2.29	3.31
Northern Coalfields Ltd	1.91	1.49	1.61	1.62	1.27	2.29
North-Eastern Coalfields	0.82	1.17	0.87	0.83	0.93	0.84
Total	49.48	45.07	42.87	39.9	39.84	38.24
Singareni Collieries Company Ltd	0.95	2.09	2.52	1.89	1.38	1.67
Jammu and Kashmir Minerals Ltd	0.01	0.01	–	–	–	–
Damodar Valley Corporation	–	0.02	–	–	–	0.04
Bengal Emta Coal Mines Ltd	–	–	–	–	0.02	0.03
Bihar State Mineral Development Corporation Ltd	–	–	–	0.01	0.01	0.03
Indian Iron and Steel Company Ltd	0.27	0.23	0.21	0.18	0.17	0.03
Tata Iron and Steel Company Ltd	0.05	0.08	0.05	0.04	0.04	0.04

Source

CCO. *Coal Directory of India* (various issues). Calcutta: Coal Controller's Organization, Ministry of Coal.

Table 1.11 Production (million tonnes) of coking coal and non-coking coal by companies and fields: 1994/95 to 1999/2000

	1994/95		1995/96		1996/97		1997/98		1998/99		1999/00	
State / Field / Company	*Coking*	*Non-coking*	*Coking*	*Non-coking*	*Coking*	*Non-coking*	*Coking*	*Non-coking*	*Coking*	*Non-coking*	*Coking*	*Non-coking*
West Bengal												
Bharat Coking Coal Ltd	0.18	0.57	0.17	0.51	0.13	0.43	0.13	0.59	0.32	0.42	–	–
Eastern Coalfields Ltd	0.14	15.82	0.13	16.68	0.15	16.95	0.09	15.73	0.08	16.05	–	–
Indian Iron and Steel Company Ltd	0.02	0.51	0.01	0.42	0.03	0.30	0.05	0.16	0.01	0.29	–	–
Bengal Emta Coal Mines Ltd	–	–	–	–	–	–	–	0.71	–	1.79	–	–
Total	0.34	16.90	0.31	17.61	0.31	17.69	0.27	17.18	0.22	18.55	–	–
Bihar												
Bharat Coking Coal Ltd	22.30	5.69	21.55	5.58	21.27	5.31	24.19	6.01	21.57	5.06	–	–
Eastern Coalfields Ltd	0.29	8.60	0.24	10.76	0.22	12.33	0.21	11.42	0.21	10.83	–	–
Central Coalfields Ltd	13.38	18.11	11.45	19.31	11.75	20.43	12.23	20.87	10.03	22.15	–	–
Damodar Valley Corporation	–	0.29	–	0.23	–	0.29	–	0.36	0.37	–	–	–
Bihar State Mineral Development Corporation Ltd	–	–	–	–	–	0.26	–	0.20	–	0.19	–	–
Indian Iron and Steel Company Ltd	0.51	–	0.56	–	0.52	–	0.51	–	0.53	0.01	–	–
Tata Iron and Steel Company Ltd	4.16	–	4.90	–	5.30	–	5.23	–	5.14	0.08	–	–
Total	40.64	32.69	38.69	35.87	39.05	38.63	42.36	38.85	37.84	38.32	–	–
Outlying fields												
Northern Coalfields Ltd	–	32.50	–	35.20	–	37.01	–	37.56	–	36.52	–	38.43
South Eastern Coalfields Ltd	0.13	49.87	0.16	53.01	0.48	54.83	0.47	56.16	0.46	57.10	–	–
Mahanadi Coalfields Ltd	–	27.33	–	32.70	–	37.37	–	42.16	–	43.51	–	43.55
Western Coalfields Ltd	0.86	26.39	0.75	28.25	0.70	30.52	0.74	31.78	0.65	31.08	–	–
North Eastern Coalfields	–	1.19	–	0.82	–	0.75	–	0.69	–	0.64	–	0.57
Singareni Collieries Company Ltd	–	25.65	–	26.77	–	28.73	–	28.94	–	27.33	–	27.56
Jammu and Kashmir Minerals Ltd	–	0.02	–	0.02	–	0.02	–	0.01	–	0.01	–	0.03
Total	0.99	162.95	0.91	176.78	1.18	189.23	1.21	197.30	1.11	196.19	–	–

Public												
Coal India Ltd	37.28	186.07	34.45	202.82	34.69	215.93	38.06	252.62	34.04	251.19	–	–
Singareni Collieries Company Ltd	–	25.65	–	26.77	–	28.73	–	28.94	–	27.33	–	27.56
Jammu and Kashmir Minerals Ltd	–	0.02	–	0.02	–	0.02	–	0.01	0.01	–	–	–
Damodar Valley Corporation	–	0.29	–	0.23	–	0.29	–	0.36	0.37	–	–	–
Bengal Emta Coal Mines Ltd	–	–	–	–	–	–	–	0.71	–	1.79	–	–
Bihar State Mineral Development Corporation Ltd	–	–	–	–	–	0.26	–	0.20	–	0.19	–	–
Indian Iron and Steel Company Ltd	0.53	0.51	0.57	0.42	0.55	0.30	0.56	0.16	0.53	0.01	–	–
Total	37.81	212.54	35.02	230.25	35.25	245.54	38.62	252.62	34.04	251.19	–	–
Private												
Tata Iron and Steel Company Ltd	4.16	–	4.90	–	5.30	–	5.23	0.71	5.14	0.08	–	–
All India	41.97	212.54	39.91	230.25	40.54	245.54	43.84	253.33	39.18	253.09	–	–

Source

CCO 1999. ***Coal Directory of India 1998/99*** Calcutta: Coal Controller's Organization, Ministry of Coal.

Table 1.12 Import of coking and non-coking coal (million tonnes): 1991/92 to 1998/99

Year	*Coking coal*	*Non-coking coal*	*Total*
1991/92	5.27	0.66	5.93
1992/93	6.32	0.42	6.74
1993/94	6.82	0.57	7.39
1994/95	10.15	1.24	11.39
1995/96	9.37	3.14	12.51
1996/97	9.78	4.53	14.31
1997/98	10.65	6.56	17.21
1998/99*	9.64	6.00	15.64

* provisional

Source
MoC. 1999. *Annual Report 1998/99*. New Delhi: Ministry of Coal.

Table 1.13 Allotted captive mining blocks: March 1997

Thermal power station / Company	*Captive block*	*Estimated coal reserves (million tonnes)*	*Estimated production potential (million tonnes a year)*
Power sector			
RPG/CESC - Budge Budge	Sarisathali	60 (mineable)	3.0
RPG - Chandil	South Dhadhu	60 (mineable)	2.0
RPG - Dholpur	Mahan	75 (mineable)	2.5
KPC - Duburi	Utkal-A	200 (geological)	2.5
NDIL - Bhadravati	Lohara W Baranj(IIV) and Bander	286 (geological)	4.5
APSEB - Krishnapatnam I	Gopalprasad	240 (mineable)	10.8
APSEB - Vishakhapatnam II	West II		
TNEB	Gopalprasad W I	240 (mineable)	8.0
INDALCO - Hirakud	Talabira I	17 (geological)	0.5
DCL - Sagardighi	Chuperbhita	289 (geological)	5.0
ACC - Wadi	Lohara East	14 (mineable)	0.3
HOKI - Hospet	Utkal B 1(since withdrawn)	200 (geological)	2.0
WBSEB - Bandel and Santaldih	Tara East	40 (mineable)	1.2
Videocon - N. Chennai II	Utkal B 1	200 (geological)	5.0
Jindal Strips - Raigarh	Gare Pelma	100 (geological)	1.0
Iron and steel			
Jindal Strips Ltd	Gare block sub-block IV/I	–	–
Prakash Industries	Hasdev Avand	–	–
Birla Technical Service Ltd	Pakribarwadih	–	–
Steel Authority of India Ltd	Seetanala, Tasra, Parbatpur and Mahal	–	–
Monnet Ispat Ltd	Gare block sub-block IV/5	–	–
Cement			
ACC Ltd	Bisrar	–	–
J K Corporation Ltd	Gare-Palma IV/8	–	–

RPG – Reliance Power Goup; CESC – Calcutta Electric Supply Company; KPC – Karnataka Power Corporation; NDIL – Nippon Denro Ltd; APSEB – Andhra Pradesh State Electricity Board; TNEB – Tamil Nadu Electricity Board; INDALCO – Indian Aluminium Company Ltd; DCL – Development Consultant Ltd; ACC – Associated Cement Company Ltd; WBSEB – West Bengal State Electricity Board

Source
Data obtained from the Ministry of Coal, New Delhi (1998).

Table 1.14 OMS (Output per man-shift) in opencast and underground mining (tonnes): 1975/76 to 1999/2000

Companies	1975/76	1980/81	1985/86	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99*	1999/00*
Overall													
CIL	0.65	0.70	0.92	1.30	1.40	1.46	1.52	1.63	1.75	1.86	1.93	2.03	1.99
SCCL	0.69	0.70	0.92	0.96	0.98	1.04	1.05	1.08	1.23	1.19	1.31	1.31	1.31
Opencast													
CIL	0.90	1.50	2.24	3.31	3.70	3.80	4.00	4.35	4.73	5.12	5.07	5.52	5.29
SCCL	0	0	3.54	4.74	4.48	4.46	4.38	3.63	3.66	2.96	3.50	3.92	4.00
Underground													
CIL	0.60	0.50	0.53	0.53	0.53	0.55	0.55	0.56	0.56	0.57	0.57	0.59	0.60
SCCL	–	–	0.87	0.65	0.67	0.70	0.71	0.69	0.74	0.72	0.76	0.75	0.73

CIL - Coal India Ltd; SCCL - Singareni Collieries Company Ltd
*April-December

Note
The OMS of the SCCL is worked out on the CIL formula from 1987/88.

Source
MoC. 2000. ***Annual Report 1999/2000.*** New Delhi: Ministry of Coal.

Table 1.15 Categorization of coal and coke

Class	*Grade*	*Properties*
Non-coking coal produced in all states other than Assam, Arunachal Pradesh, Meghalaya, and Nagaland	A	UHV (Useful heat value) greater than 6200 kcal/kg
	B	UHV 5600 6200 kcal/kg
	C	UHV 4940 5600 kcal/kg
	D	UHV 4200 4940 kcal/kg
	E	UHV 3360 4200 kcal/kg
	F	UHV 2400 3360 kcal/kg
	G	UHV 1300 2400 kcal/kg
Non-coking coal produced in the states of Arunachal Pradesh, Assam, Meghalaya, and Nagaland	Not graded	
Coking coal		
Steel	I	Ash content not exceeding 15%
Steel	II	Ash content greater than 15% but less than 18%
Washery	I	Ash content greater than 18% but less than 21%
Washery	II	Ash content greater than 21% but less than 24%
Washery	III	Ash content greater than 24% but less than 28%
Washery	IV	Ash content greater than 28% but less than 35%
Semi-coking and weakly coking coals		
Semi-coking	I	Ash plus moisture content not exceeding 19%
Semi-coking	II	Ash plus moisture content greater than 19% but not exceeding 24%
Long-flame coal produced in collieries in all the states excepting Assam, Arunachal Pradesh, Meghalaya, Nagaland, and the Singareni collieries in Andhra Pradesh	A	UHV greater than 6200 kcal/kg
	B	UHV greater than 5600 kcal/kg but not exceeding 6200 kcal/kg
	C	UHV greater than 4940 kcal/kg but not exceeding 5600 kcal/kg
	D	UHV greater than 4200 kcal/kg but not exceeding 4940 kcal/kg
Hard coke		
By-product	Premium	Ash content not exceeding 25%
By-product	Ordinary	Ash content greater than 25% but not exceeding 30%
Beehive	Premium	Ash content not exceeding 27%
Beehive	Superior	Ash content greater than 27% but not exceeding 31%
Beehive	Ordinary	Ash content greater than 31% but not exceeding 36%

Notes

1 Coking coals have been classified thus by the erstwhile Coal Board under the Coal Mines (Conservation, Safety, and Development) Act, 1952 (12 of 1952) (since repealed) or such coals as have been declared or may be declared as coking coal by the central government under the Colliery Control Order, 1945, or the Coal Mines (Conservation and Development) Act, 1974 (28 of 1974), and the rules made under both the aforesaid Acts.

2 Semi-coking coals and weakly-coking coals are classified as 'blendable coals' by the erstwhile Coal Board under the Coal Mines (Conservation, Safety, and Development) Act, 1952 (12 of 1952) (since repealed), or as may be declared as 'semi-coking' or 'weakly coking' coals by the central government under the Colliery Control Order, 1945, or the Coal Mines (Conservation and Development) Act 1974 (28 of 1974), and the rules made under both the aforesaid Acts.

3 Coals other than coking, semi-coking, or weakly-coking coals are non-coking coals.

4 UHV is defined by the formula: UHV in kcal/kg = (8900 - 138 x [percentage of ash content + percentage of moisture content]). In the case of coal having moisture less than 2% and volatile content less than 19%, the UHV shall be the value arrived as above, reduced by 150 kcal/kg for each 1% reduction in volatile content below 19% fraction pro-rata. Both moisture and ash shall be determined after equilibrating at 60% relative humidity and 40°C temperature as per relevant clauses of the Indian Standard Specification No. IS.1350-1959.

5 Ash percentage of coking coals and hard coke shall be determined after air-drying as per IS:1350-1959. If the moisture so determined is more than 2%, the determination shall be after equilibrating at 60% relative humidity at 40 °C as per IS:1350-1959.

6 Long-flame coals shall be defined by the parameters as laid down in Table II of the Indian Standard Specification No IS:770-1964, 'General classification of coals (Revised)'. The volatile matter (on unit coal basis) present in these coals exceeds 32%.

7 The above classification shall not apply to coals other than bituminous or sub-bituminous coals as specified under the Indian Standard Specification No. IS:77-1964.

Source

MoC. 1995. The Gazette of India. Extraordinary, Part II, Section 3, Sub-section (ii), No. 718. pp. 3-4 New Delhi: Ministry of Coal. 5 pp.

Table 1.16 Comparison of GCV (gross calorific value) and UHV (useful heat value) for non-coking coal (with six per cent moisture content)

Grade	*UHV (kcal/kg)*		*Ash (%)*		*GCV (kcal/kg)*	
	From	*To*	*From*	*To*	*From*	*To*
A	–	>6200	–	<13.56	–	>6406
B	5600	6200	13.56	17.91	5997	6406
C	4940	5600	17.91	22.69	5447	5997
D	4200	4940	22.69	28.06	5042	5447
E	3360	4200	28.06	34.14	4469	5042
F	2400	3360	34.14	41.10	3814	4469
G	1300	2400	41.1	49.07	3064	3814

Source

TERI. 1997 **Relative economics of fuels in power generation.** TERI Report. New Delhi: Tata Energy Research Institute.

Table 1.17 Production from coal washeries (million tonnes): 1975/76 to 1999/2000

Feed and production	*1990/91*	*1991/92*	*1992/93*	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*	*1998/99*	*1999/00*
Prime coking coal										
Raw coal feed	12.47	12.57	12.05	12.95	13.30	13.09	12.8	–	–	–
Clean coal production	6.44	6.78	6.54	6.69	6.88	6.76	5.9	4.5	–	–
Middling production	3.08	3.47	3.48	3.70	3.52	4.00	3.7	–	–	–
Medium coking coal										
Raw coal feed	8.03	9.24	10.44	9.74	9.44	9.91	9.4	–	–	–
Clean coal production	4.73	5.16	5.56	5.43	4.87	5.10	5.0	5.4	–	–
Middling production	2.46	2.60	2.98	2.91	2.81	2.80	3.1	–	–	–
Total										
Raw coal feed	20.50	21.81	22.49	22.69	22.74	23.00	22.2	22.0	21.1	12.0
Clean coal production	11.10	12.00	12.10	12.12	11.75	11.90	10.9	10.0	9.7	5.6
Middling production	5.60	6.07	6.46	6.61	6.33	6.80	6.8	7.5	7.2	4.4

Sources

1 CCO. ***Coal Directory of India*** (various issues). Calcutta: Coal Controller's Organization, Ministry of Coal.

2 MoC. 1998. ***Annual Report 1997/98***. New Delhi: Ministry of Coal.

For more details, please see TEDDY ONLINE+ [Section: Coal (general, production, and despatch)]

Table 1.18 Raw coal feed (million tonnes) and clean coal production (million tonnes) of washeries: 1993/94 to 1998/99

Company/ Washeries	Raw coal feed						Clean coal production					
	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
Bharat Coking Coal Ltd												
Dugda I	1.14	1.09	0.85	0.53	0.01	0.11	0.54	0.51	0.48	0.26	0	0.07
Dugda II	1.25	1.25	1.10	1.10	1.22	0.99	0.60	0.59	0.62	0.48	0.48	0.40
Bhojudih	1.51	1.61	1.49	1.45	1.49	1.50	0.98	1.01	0.98	0.86	0.83	0.80
Patherdih	0.93	1.01	1.02	0.98	0.81	0.73	0.52	0.62	0.65	0.55	0.34	0.27
Lodna	0.37	0.34	0.34	0.28	0.25	0.33	0.20	0.19	0.18	0.14	0.11	0.14
Sudamdih	0.85	1.02	0.94	0.90	0.84	0.88	0.34	0.47	0.42	0.39	0.33	0.32
Barora	0.32	0.33	0.32	0.34	0.36	0.32	0.12	0.13	0.15	0.14	0.14	0.11
Moonidih	1.05	1.07	0.99	0.98	1.03	0.92	0.51	0.55	0.50	0.49	0.51	0.44
Mohuda	0.36	0.34	0.35	0.37	0.37	0.35	0.26	0.24	0.24	0.24	0.25	0.22
Total	7.78	8.06	7.40	6.93	6.38	6.23	4.07	4.31	4.22	3.55	3.00	2.81
Central Coalfields Ltd												
Kargali	2.44	2.18	2.04	1.94	1.72	1.60	1.35	1.05	1.01	1.02	0.79	0.69
Kathara	1.83	1.76	1.73	1.55	1.62	1.71	0.82	0.78	0.72	0.61	0.55	0.55
Swang	0.99	0.99	0.97	0.81	0.71	0.79	0.70	0.60	0.61	0.46	0.41	0.43
Gidi	1.80	1.79	1.95	1.64	1.79	0.16	0.96	0.92	0.93	0.68	0.62	0.04
Rajrappa	1.71	1.70	2.18	2.42	2.13	2.13	0.97	0.90	1.23	1.39	1.01	0.98
Kedla	0	0	0	0.01	0.62	1.00	0	0	0	0	0.25	0.39
Total	8.77	8.42	8.87	8.37	8.59	7.39	4.80	4.24	4.50	4.15	3.63	3.08
Western Coalfields Ltd												
Nandan	0.61	0.68	0.69	0.65	0.68	0.66	0.37	0.39	0.42	0.41	0.39	0.35
Coal India Ltd												
Durgapur Steel Plant	17.16	17.16	16.96	15.95	15.65	14.28	9.24	8.94	9.14	8.11	7.02	6.24
Durgapur Steel Plant Washery	0.47	0.41	0.24	0.12	0.14	0.41	0.30	0.27	0.19	0.09	0.10	0.31
Durgapur Power Ltd												
Durgapur Power Limited Washery	0.01	0.01	0	0	0	0	0.01	0.01	0	0	0	0

Indian Iron and Steel Company												
Chasnala	1.16	1.11	1.00	0.85	1.03	1.14	0.59	0.58	0.54	0.50	0.58	0.63
Total	1.64	1.53	1.24	0.97	1.17	1.55	0.90	0.85	0.73	0.59	0.68	0.68
Public sector	18.80	18.69	18.20	16.92	16.85	15.83	10.13	9.79	9.87	8.70	7.70	7.20
Tata Iron and Steel Company												
West Bokaro I	0.61	0.51	0	0	0	1.87	0.34	0.29	0	0	0	0
West Bokaro II	1.90	1.78	1.72	1.82	1.87	1.94	0.72	0.67	0.62	0.66	0.69	0.77
West Bokaro III	0	0.43	1.81	2.13	2.07	1.43	0	0.16	0.63	0.75	0.74	0.71
Jamadoba	1.38	1.33	1.27	1.36	1.24	–	0.93	0.84	0.80	0.78	0.88	1.07
Total	3.89	4.05	4.80	5.31	5.18	5.24	1.99	1.96	2.05	2.19	2.31	2.55
Grand total	22.69	22.74	23.00	22.23	22.00	21.07	12.12	11.75	11.92	10.89	10.01	9.72

Source

CCO *Coal Directory of India* (various issues). Calcutta. Coal Controller's Organization, Ministry of Coal

Table 1.19 Inter-modal split of coal movement: 1977/78 to 1999/2000

Mode	*1977/78*		*1995/96*		*1996/97*		*1997/98*		*1998/99*		*1999/2000*[a]	
	MT	*%*	*MT*	*%*	*MT*	*%*	*MT*	*%*	*MT*	*%*	*MT*	*%*
Rail	78	78	156	56	165	57	176	57.14	164	54.85	127	56.44
Road	17	17	54	19	52	18	54	17.53	53	17.73	37	16.44
Belt	2	2	6	2	6	2	9	2.92	11	3.68	7	3.11
Ropeway	1	1	6	2	5	2	6	1.95	6	2.01	4	1.78
Merry-go-round	2	2	56	21	59	21	63	20.45	65	21.74	50	22.22
Total	100	100	280	100	287	100	308	100.00	299	100.00	225	100.00

MT - million tonne

[a] April-November

Source

MoC. 2000. *Annual Report 1999/2000*. New Delhi: Ministry of Coal.

Table 1.20 Capacity and traffic handled at major ports (million tonnes): 1998/99

Port	*Capacity*		*Traffic handled*	
	All commodity	*Only coal*	*All commodity*	*Only coal*
Calcutta	8.3	–	9	–
Chennai	26.6	–	35	9.9
Haldia	22.7	6.8	20	7.1
Jawaharlal Nehru	16.0	–	12	–
Kandla	37.0	–	41	0.7
Kochi	13.0	–	13	0.2
Mormugao	18.7	–	18	0.3
Mumbai	31.0	–	31	–
New Mangalore	17.0	–	14	0.1
Paradip	11.0	4.8	13	7.9
Tuticorin	8.0	4.0	10	4.5
Vishakapatnam	30.0	–	36	8.4

Source

MoST. 1999. *Basic Port Statistics of India 1998/99*. New Delhi. Ministry of Surface Transport.

Table 1.21 Average cost of production (rupees per tonne) of the CIL (Coal India Limited) and the SCCL (Singareni Collieries Company Limited) coal: 1993/94 to 1998/99

Year	*Average cost of production*	
	CIL	*SCCL*
1993/94	364.4	487.00
1994/95	380.5	543.00
1995/96	412.7	643.00
1996/97	442.1	731.56
1997/98	480.8	775.78
1998/99	502.4	826.30

Source
MoC. 2000 *Annual Report 1999/2000* New Delhi Ministry of Coal.

Table 1.22 Average pithead unit value (rupees per tonne) of coal: 1974/75 to 1997/98

Year	*Pithead unit value*
1974/75	70.42
1979/80	118.95
1984/85	206.88
1989/90	278.51
1990/91	277.89
1991/92	354.90
1992/93	355.41
1993/94	433.21
1994/95	442.00
1995/96	505.50
1996/97	576.00
1997/98	600.30

Note
The figures are up to March for all the years.

Source
CCO. *Coal Directory of India* (various issues).
Calcutta: Coal Controller's Organization, Ministry of Coal.

Table 1.23 Average pithead prices (rupees per tonne) of the CIL (Coal India Limited) and the SCCL (Singareni Collieries Company Limited) coal: 1991 to 1999

	Average pithead price	
Date of revision	*CIL*	*SCCL*
27 December 1991	322.00	388.00
17 February 1993	364.00	434.00
19 June 1993	381.00	452.00
01 April 1994	381.00	482.00
17 June 1994	401.00	503.00
01 April 1996	469.00	503.00
19 April 1996	469.00	530.00
20 October 1996	498.54	530.00
12 November 1996	498.54	529.42
19 March 1997	498.54	710.59
01 April 1997	553.37	710.59
01 October 1997	559.02	710.59
21 August 1998	586.19	710.59
29 August 1998	586.19	753.31
05 January 1999	590.05	753.31
31 May 1999	595.84	753.31
19 September 1999	595.84	775.62

Source
MoC. 2000. *Annual Report 1999/2000*. New Delhi: Ministry of Coal.

Table 1.24 Annual average import price of coal (dollars per tonne)

Country	*1994*	*1995*	*1996*	*1997*[a]
Australia	32.30	39.37	38.07	35.4
USA	36.48	39.19	37.21	36.5

[a] January-December

Note
Coal (Australian), thermal, 12 000 btu/lb, less than 1% sulphur, 14% ash, free-on-board piers, Newcastle/Port Kembla
Coal (US), thermal, 12 000 btu/lb, less than 1% sulphur, 12% ash, free-on-board piers, Hampton Road/Norfolk

Table 1.25 Customs duty structure on imported coal: 1999/2000

Import of coal	*Current duty*
Coking coal of ash content less than 12%	5% basic customs duty
Special customs duty	5%
Special additional duty	4%
Non-coking coal, coke, coking coal of ash content above 12%	15% basic customs duty
Surcharge on basic customs duty	10%
Special additional duty	4%

Source
MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

Table 1.26 Royalty (million rupees) paid on coal by states: 1991/92 to 1998/99

Year	*West Bengal*	*Bihar*	*Orissa*	*Maharashtra*	*Madhya Pradesh*	*Uttar Pradesh*	*Assam*	*Andhra Pradesh*	*Total*
1991/92	100.1	3,178	435	610	2,402	475	6.4	354	7,561
1992/93	87.2	5,043	631	1,089	3,845	668	5.4	1,000	12,369
1993/94	106.3	5,551	728	1,111	3,696	706	4.4	2,913	14,815
1994/95	95.9	6,131	1,041	1,597	4,389	874	4.2	1,445	15,577
1995/96	78.2	6,583	1,808	2,179	6,668	1,135	215.9	1,753	20,420
1996/97	108.7	6,828	1,854	2,003	6,841	1,214	99.2	1,971	20,919
1997/98	126.4	6,590	2,276	2,048	6,636	1,024	61.1	2,781	21,542
1998/99	97.6	6,079	2,289	1,846	6,751	868	51.7	2,002	19,984

Source
MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

Table 1.27 Revised rates of royalty (rupees per tonne)

Coal group	*Royalty from 1 August 1991*	*Royalty from 11 October 1994*
Group-I (Coking coal SG I II, WG I	150	195
Group-II (Coking coal WGII, III, SC I II Non-coking A, B)	120	135
Group-III (Coking coal WGIV, Non-coking C)	75	95
Group-IV (Non-coking D, E)	45	70
Group-V (Non-coking F, G)	25	50
Group-VI (Coal produced in Andhra Pradesh)	70	75

Note
Royalty has not been revised since 1994.

Source
MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

Table 1.28 Selling price of coal in respect of the CIL (Coal India Ltd) and subsidiaries (rupees per tonne): 20 April 2000

Subsidiary	*Characteristics*	*Grade*	*Steam coal and rubble*	*Slack coal and washery middlings*	*Run-of-mine coal*
Non-coking coal					
Eastern Coalfields Ltd (Ranigunj)	Coal produced in Annexure I collieries	A	1,362	1,274	1,262
		B	1,293	1,204	1,193
		C	1,116	1,028	1,016
		D	923	830	823
Coal produced in other collieries of Ranigunj Coalfields	Long-flame coal	A	1,248	1,158	1,148
		B	1,184	1,094	1,084
		C	1,025	935	925
		D	849	755	749
	Non-long-flame coal	A	1,176	1,086	1,076
		B	1,114	1,024	1,014
		C	954	864	854
		D	780	686	680
		E	576	482	476
		F	479	385	379
		G	371	277	271
Eastern Coalfields Ltd (Salanpur)	Non-long-flame coal	A	1,170	1,080	1,070
		B	1,063	973	963
		C	891	802	791
		D	731	637	631
		E	576	482	476
		F	479	386	379
		G	371	278	271
Eastern Coalfields Ltd (SP Mines)	Coal produced in Annexure I collieries	A	1,299	1,210	1,199
		B	1,184	1,095	1,084
		C	1,005	916	905
		D	836	742	736
Eastern Coalfields Ltd (SP Mines)	Long-flame coal	A	1,190	1,101	1,090
		B	1,086	997	968
		C	923	834	823
		D	768	675	668
	Non-long-flame coal	A	1,118	1,028	1,018
		B	1,015	925	915
		C	853	763	753
		D	700	606	600
		E	576	482	476
		F	479	385	379
		G	371	277	271

Continued

Table 1.28 continued

Subsidiary	Characteristics	Grade	Steam coal and rubble	Slack coal and washery middlings	Run-of-mine coal
Eastern Coalfields Ltd (Mugma)	Long-flame coal	A	1,190	1,100	1,090
		B	1,086	996	968
		C	923	833	823
		D	768	674	668
	Non-long-flame coal	A	1,118	1,029	1,018
		B	1,015	926	915
		C	853	764	753
		D	700	606	600
		E	576	482	476
		F	479	386	379
		G	371	278	271
Eastern Coalfields Ltd (Rajmahal Project)	Long-flame coal	D	932	838	832
	Non-long-flame coal	E	739	646	639
		F	643	550	543
		G	535	441	435
Western Coalfields Ltd	Long-flame coal	A	1,096	1,046	1,036
		B	1,038	988	978
		C	974	924	914
		D	923	869	863
	Non-long-flame coal	A	1,033	983	973
		B	975	925	915
		C	912	862	852
		D	859	805	799
		E	685	671	665
		F	574	560	554
		G	438	424	418
South-Eastern Coalfields Ltd	Coal produced in Annexure I collieries	A	1,134	1,079	1,068
		B	1,032	971	966
		C	872	817	806
		D	748	694	688
	Long-flame coal	A	1,030	980	970
		B	938	888	878
		C	793	743	733
		D	685	631	625
	Non-long-flame coal	A	967	917	907
		B	875	825	815
		C	730	680	670
		D	621	567	561

Continued

Table 1.28 continued

Subsidiary	Characteristics	Grade	Steam coal and rubble	Slack coal and washery middlings	Run-of-mine coal
		E	465	451	445
		F	375	361	355
		G	274	260	254
Central Coalfields Ltd and Bharat Coking Coal Ltd	Long-flame coal	A	1,079	1,029	1,019
		B	982	932	922
		C	830	780	770
		D	716	662	656
	Non-long-flame coal	A	1,012	962	952
		B	916	866	856
		C	764	714	704
		D	649	595	589
		E	487	473	467
		F	393	379	373
		G	287	273	267
Northern Coalfields Ltd	Long-flame coal	A	1,088	1,038	1,028
		B	991	941	931
		C	837	787	777
		D	723	669	663
	Non-long-flame coal	A	1,021	971	961
		B	924	874	864
		C	770	720	710
		D	655	601	595
		E	492	478	472
		F	396	382	376
		G	289	275	269
Mahanadi Coalfields Ltd	Long-flame coal	A	992	942	932
		B	903	853	843
		C	765	715	705
		D	663	609	603
	Non-long-flame coal	A	929	879	869
		B	840	790	780
		C	702	652	642
		D	599	545	539
		E	448	434	428
		F	361	347	341
		G	263	249	243
Coking coal					
Bharat Coking Coal Ltd	Steel	I	1,800	1,750	1,740
(For collieries listed in Annexure III)	Steel	II	1,513	1,463	1,453
	Washery	I	1,319	1,269	1,259

Continued

Table 1.28 continued

Subsidiary	Characteristics	Grade	Steam coal and rubble	Slack coal and washery middlings	Run-of-mine coal
	Washery	II	1,103	1,053	1,043
	Washery	III	831	781	771
	Washery	IV	777	727	717
Bharat Coking Coal Ltd	Steel	I	1,601	1,551	1,541
	Steel	II	1,347	1,297	1,287
	Washery	I	1,175	1,125	1,115
	Washery	II	984	934	924
	Washery	III	743	693	683
	Washery	IV	695	645	635
Eastern Coalfields Ltd	Washery	I	1,293	1,203	1,193
	Washery	II	1,088	999	988
	Washery	III	830	741	730
	Washery	IV	779	690	679
Central Coalfields Ltd	Washery	I	1,175	1,125	1,115
	Washery	II	984	934	924
	Washery	III	743	693	683
	Washery	IV	695	645	635
South-Eastern Coalfields Ltd	Washery	I	1,084	1,034	1,024
	Washery	II	908	858	848
	Washery	III	687	637	627
	Washery	IV	644	594	584
Western Coalfields Ltd	Washery	I	1,084	1,034	1,024
	Washery	II	908	858	848
	Washery	III	825	775	765
	Washery	IV	688	638	628
Bharat Coking Coal Ltd (For collieries listed in Annexure III)	Semi-coking	I	1,274	1,224	1,214
	Semi-coking	II	1,065	1,015	1,005
Bharat Coking Coal Ltd	Semi-coking	I	1,135	1,085	1,075
	Semi-coking	II	950	900	890
Eastern Coalfields Ltd (Ranigang)	Semi-coking	I	1,336	1,247	1,236
	Semi-coking	II	1,124	1,034	1,024
Central Coalfileds Ltd	Semi-coking	I	1,135	1,085	1,075
	Semi-coking	II	950	900	890
All subsidiaries	Semi-coking	I	1,084	1,034	1,024
	Semi-coking	II	908	858	848

Source

CIL 2000. Sales and Marketing: 2000. Price list April 2000. New Delhi: Coal India Ltd.

Table 1.29 *Plan expenditure and the share of coal (million rupees)*

Five-Year Plan	*Plan expenditure*[a]	*Share of coal*	*Total energy*[b]
First (1951-56)	19,600	–	3,861.2 (19.7)
Second (1956-61)	26,700	507.3 (1.9)	3,310.8 (12.4)
Third (1961-66)	85,800	1,115.4 (1.3)	15,873.0 (18.5)
Fourth (1969-74)	157,800	1,104.6 (0.7)	33,453.6 (21.2)
Fifth (1974-79)	394,300	11,434.7 (2.9)	99,363.6 (25.2)
Sixth (1980-85)	1,092,900	38,251.5 (3.5)	307,104.9 (28.1)
Seventh (1985-90)	2,202,200	70,470.4 (3.2)	621,020.4 (28.2)
Eighth (1992-97)[c]	4,341,000	104,184.0 (2.4)	1,150,365.0 (26.5)

[a] expenditure at current price at the base year of the respective plans

[b] total energy includes power, coal, oil and gas, and new and renewable energy sources.

[c] outlay

Note

Figures in parentheses are percentages.

Source

Ninth Five-Year Plan. 1997-2002. Volume II. Thematic Issues and Sectoral Programmes. New Delhi: Planning Commission, Government of India.

Table 1.30 Annual Plan expenditure during the Eighth Five-Year Plan and actual expenditure (million rupees)

Year	*Coal India Ltd*	*Singareni Collieries Company Ltd*	*Science and technology regional exploration and others*
1992/93			
Budget estimate	18,500.0	4,090.0	230.0
Revised	17,600.0	4,090.0	230.0
Actual expenditure	18,084.7	4,064.5	182.4
1993/94			
Budget estimate	19,010.0	6,422.0	170.0
Revised	17,200.0	5,600.0	170.0
Actual expenditure	16,879.2	5,449.8	159.1
1994/95			
Budget estimate	20,629.0	4,834.0	235.0
Revised	18,500.0	5,500.0	229.9
Actual expenditure	16,045.6	5,165.8	48.4
1995/96			
Budget estimate	22,600.0	5,160.0	438.2
Revised	12,037.8	3,357.5	251.0
Actual expenditure	15,036.3	2,593.5	147.9
1996/97			
Budget estimate	21,430.0	5,389.7	528.0
Revised	13,108.3	3,250.0	280.0
Actual expenditure	15,304.5	2,500.6	280.7
1998/99			
Budget estimate	25,172.0	3,315.7	921.3
Revised	17,000.0	2,800.0	571.0
Actual expenditure	17,537.3	2,004.9	448.0
1999/2000			
Budget estimate	25,560.0	2,271.9	825.4
Revised	26,791.9	2,172.0	631.4
Actual expenditure	17,950.5	816.0	751.3

Source

MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

Table 1.31 Net budgetary support as percentage of actual plan expenditure in coal: 1992/93 to 1996/97

Year	*Net budgetary support (%)*
1992/93	13.54
1993/94	8.50
1994/95	12.55
1995/96	12.59
1996/97	7.41

Source

MoC. 2000. ***Annual Report 1999/2000***. New Delhi: Ministry of Coal.

Table 1.32 Availability and estimated sectorwise consumption of raw coal (million tonnes): 1990/91 to 1997/98

Items	*1990/91*	*1991/92*	*1992/93*	*1993/94*	*1994/95*	*1995/96*	*1996/97*	*1997/98*
Availability								
Production	213.90	232.80	242.00	248.68	257.8	273.4	286.1	297.2
Imports[a]	5.71	5.92	6.26	7.10	8.3	8.9	9.5	9.5
Exports	0.10	0.11	0.13	0.10	0.1	0.1	0.1	0.1
Pithead stock (opening)	37.64	42.47	48.53	51.39	50.8	47.5	45.6	42.0
Pithead stock (closing)	42.47	48.53	51.31	50.75	47.5	45.6	42.0	41.5
Adjustment of pithead stock								
Industrial stock (opening)	6.21	5.25	5.50	0	0	0	0	0
Industrial stock (closing)	5.25	5.48	0	0	0	0	0	0
Available for industrial consumption after adjustment of off-take	213.30	228.87	241.79	255.90	269.2	284	299	307.1
Consumption/supply (raw coal)								
Steel and washery	30.91	34.03	37.30	37.63	38.6	39.1	39.8	39.8
Railways	5.24	5.06	4.34	2.00	0.67	0.3	0.1	0.1
Electricity (excluding middlings)	113.71	126.84	138.57	154.41	160.9	184.5	199.6	205.5
Cement	10.43	10.80	11.70	11.07	12.4	11.1	10.1	10.1
Cotton	2.58	1.96	1.90	1.81	1.8	1.2	1.3	1.3
Jute	0.12	0.12	0	0	0	0.1	0.1	0
Paper[b]	2.81	2.67	2.56	2.90	3.2	3.2	3.5	3.4
Brick	1.71	1.75	1.65	1.54	1.0	0.9	1.0	1.6
Coal for soft coke	1.20	1.03	0.97	0.44	0.3	0.3	0.3	0
Other industries	40.58	40.51	38.71	39.53	46.7	40.0	39.8	42.1
Colliery consumption	4.07	4.10	3.99	4.71	3.7	3.5	3.4	3.1
Total consumption	213.30	228.87	241.75	255.90	269.3	284.2	299.0	307.1

[a] only coking coal imports

[b] includes only rail despatches

Source

CCO. *Coal Directory of India* (various issues). Calcutta: Coal Controller's Organization, Ministry of Coal.

For more details, please see TEDDY ONLINE+ [Section: Coal (general)]

Table 1.33A Supply (thousand tonnes) of coal to steel plants: 1995/96 to 1996/97

Steel plant	1995/96 Prime coking coal	Medium coking coal	Blendable coking coal	Total	Boiler coal	1996/97 Prime coking coal	Medium coking coal	Blendable coking coal	Total	Boiler coal
Bhilai steel plant	1,088 3	1,381.5	239.2	2,709 0	629 9	892 4	1,273 2	205 0	2,370 6	779 4
Bokaro steel plant	978 0	992.4	7.8	1,978.2	1,674.5	900 1	1,252 1	0	2,153 0	1,602 9
Durgapur steel plant	726 9	548 4	21 1	1,296 4	384 4	622 0	448 6	8 7	1,079 3	549 3
Indian Iron and Steel Company	900 0	483 7	66 9	1,450.6	195 2	777 1	419 3	73 6	1,270 0	248 1
Rourkela steel plant	618 5	686.2	8.6	1,313.3	1,199.3	356 2	714 1	0	1,070 3	1,302 2
Steel Authority of India Ltd (Total)	4,311 7	4,092.2	343.6	8,747.5	4,083.3	3,547 8	4,108 1	287 3	7,943 2	4,481 9
Tata Iron and Steel Company Ltd	681 6	1,172 9	46 9	1,901.4	635.8	378 0	590 0	17 0	985 0	1,474 2
Visakhapatnam Steel Plant	20.9	915.8	0	936.7	1,194 4	75 7	750 5	0	826 2	1,351 8
Grand total	5,014 2	618 9	390 5	11,585.6	5,913 5	4,001 5	5,448 6	304 3	9,754 4	7,307 9

Source

CCO. 2000. ***Coal Directory of India 1999/2000***. Calcutta: Coal Controller's Organization, Ministry of Coal.

Regulatory framework for the coal sector - a review

This paper presents the summary from a study report titled "Review of the regulatory framework in Coal Industry in India" This study was jointly undertaken by Tata Energy Research Institute (TERI), New Delhi and International Mining Consultants, United Kingdom in 1999-00 and was sponsored by the Ministry of Coal, Government of India.

The primary purpose of the report was to analyse the current regulatory framework which will assist GoI to formulate an action plan for the implementation of a regulatory regime, which will (a) free existing public sector coal companies from avoidable procedural constraints; (b) encourage private sector participation in the coal sector; and (c) make the regulatory framework investor friendly.

The analysis of the existing regulatory framework and the preparation of recommendations was a five-stage process. These stages were:

- Establishment of the approach to the task
- Identification of all legislation pertinent to the coal sector
- Review of the legislation and procedures in the context of perceived sectoral policy
- Preparation of options for change
- Preparation of recommendations for change

Nine topics for analysis, which broadly reflect the process of coal development from prospecting to coal sales, were selected. They are:

- Mineral Rights
- Surface Rights
- Prospecting / Mining Operations / Health and Safety
- Financial / Fiscal
- Labour / Trade Unions / Employee Welfare / Compensation
- Environment
- Forests
- Resettlement / Rehabilitation
- Marketing / Distribution / Transportation / Sales

In order to prepare recommendations for a regulatory framework, it is necessary to identify the policy for the sector. In India, there is no complete, clearly defined policy for the coal sector. Consequently, several outstanding issues must be resolved by the Government before a meaningful programme of regulatory reform can be initiated.

They include:

- The quality, location and extent of coal reserves to be made available to the private sector
- Restrictions on foreign investment in the coal sector

In addition the role to played by Coal India Limited in the foreseeable future needs to be decided.

Resolution of these issues will assist in the preparation of an "Action Plan" for regulatory reform.

Several economic issues must be considered if the likely interest by potential investors is to be assessed. They include:

(a) The poor economics of electricity generation, transmission and distribution.
(b) Large captive generation by industrial units decreasing the demand on the utilities.
(c) Increasing coal imports.
(d) The cost of transporting coal by rail.
(e) Negative international investment conditions for coal projects.

These negative factors for new investment in the coal sector should be borne in mind as it would be unrealistic to suggest that regulatory reform in itself will stimulate investment.

II Mineral Rights.

In India, minerals are owned by the States. However, the Constitution provides that the Central Government may exercise the power to regulate minerals should it elect to do so. The Central Government has elected to use this power by enacting the Mines and Minerals (Regulation and Development) Act 1957 (MMRDA) which designates (in the First Schedule) coal, and some other minerals, as minerals under the direct control of the Central Government. The Mineral Concession Rules 1960 (MCR) were implemented soon after to provide for the administration of mineral titles. Another important piece of legislation with respect to coal rights is the Coal Bearing Areas (Acquisition and Development) Act 1957 (CBAADA). This legislation provided for greater public control over coal production by empowering the Central Government to acquire unworked land containing or likely to contain coal deposits.

This legislative framework has been analysed with respect to a number of important parameters. These include:

(a) Independence of agency responsible for administering mineral rights.
(b) Exemptions for PSEs.
(c) Eligibility Criteria for Coal Rights.
(d) Reserved Areas.
(e) Prospecting Rights.
(f) Mining Rights.
(g) Transfers.
(h) Assignment.
(i) Reporting and Confidentiality.
(j) Discretionary Powers.

The current legislation is deficient, to varying degrees, in all categories if private sector investment is to be encouraged. The most significant problems relate to the independence of the administering agency, the exemptions/privileges for PSEs, priority and exclusivity for mineral titles, and discretionary powers. Currently the primary administering agency is the Department of Coal who are at the same time the shareholder representative on the board of the PSE, Coal India Limited. The PSEs are also the beneficiary of several special privileges including exemption from the requirement to obtain prospecting licences with all the associated procedural delays. The standard provision of "first come, first served" for the acquisition of mineral titles is unnecessarily qualified. Furthermore, normal international practice is for titles to be granted on an exclusive basis for all minerals in a given area rather than for specified minerals. This usual procedure avoids the problem of overlapping mineral titles for a given tract. A major problem with the current legislation from the point of view of a potential investor is the discretionary nature of many of the provisions. While many of these apparent discretionary powers have been curbed by the courts, they still appear in the legislation.

Geological information acquired by the Government from the holders of surrendered mineral rights is currently not readily available to potential investors. The practice of attempting to recover the direct cost of the acquisition of this data is counter-productive. All such information is part of the geological infrastructure of India and it should be used to attract new investment in minerals. Normal international practice is for such information to be available for the cost of reproduction.

"Coal blocks", as were awarded for captive mining, have not been a success as most potential investors have not progressed towards production. Reasons for this include the size of the blocks, the location of the blocks, and the reserves available. These drawbacks can be attributed in large part to the selection criteria which required that the blocks would not be required by CIL for production through the year 2036 and the proviso that the coal reserves were to be for captive use.

The block concept should be radically modified. CIL should be required to apply for PLs and MLs subject to the current legislation and all areas not taken made available to potential investors. A system of competitive bidding for new areas for prospecting and development should be initiated for the allocation of these areas.

Important recommendations are:

- The majority of board positions in the PSEs should be held by persons other than officials of the administering Ministry.
- Coal Bearing Areas (Acquisition and Development) Act should be retained for an interim period.
- "First come, first served" should be the non-discretionary principle for issuance of mineral rights once the sector is fully liberalised.
- Data both from the Geological Survey of India and with regard to areas where mineral rights have been surrendered should be immediately available to the public at nominal cost.

III Surface Rights.

The acquisition and physical possession of land, referred to as surface rights in this report, is a prime prerequisite for commencement of a mining operation. The process for the acquisition of surface rights depends on the category of land to be acquired.

Based on ownership. land can be broadly divided into tenancy (private) land. State owned forest land and State owned revenue land. State owned land is acquired by administrative procedure in the case of revenue land and by procedures under the Forest (Conservation) Act 1980 in the case of forest land. In the first case there appear to be few difficulties and in the second case a full analysis is presented in the chapter on "Forests"

Acquisition of tenancy land may be by procedures under the Land Acquisition Act 1894 or by direct negotiation. In addition. PSEs are able to take advantage of the provisions of the Coal Bearing Areas (Acquisition and Development) Act 1957 (CBAADA) for the acquisition of surface rights (as well as mineral rights) and the Land Acquisition Act. As the Land Acquisition Act is available only for a "public purpose". any private sector investor is. in theory at least. restricted to the use of direct negotiation for acquisition of surface rights for tenancy land. Some States have adopted procedures or enacted Land Codes which assist investors to acquire surface rights.

Land acquisition procedures without exception are prone to delay and have resulted in project delays and /or abandonment.

The main recommendations are that:

- The provisions of the CBAADA for acquisition of surface rights be retained on an interim basis.
- Those States. desirous of investment which do not already have suitable provisions in their land codes. make such provisions in their land codes to assist the private sector.

IV Prospecting/Mining Operations/Health and Safety.

This chapter of the report deals with the regulatory framework as it relates to prospecting, obtaining a permit to mine and mining operations to closure.

The legislation primarily concerned with these matters is contained in:

(a) Mines and Minerals (Regulation and Development) Act 1957 (MMRDA)
(b) Coal Mines (Conservation and Development) Act 1974 (CMCDA)
(c) Colliery Control Order 2000 (CCO 2000)
(d) Mines Act 1952 (MA)

There are a number of supplementary rules. orders and notifications which provide for additional administrative requirements and procedures.

Prospecting is largely unregulated with regard to procedures except for requirements for site, environmental and forest clearances which are addressed in the appropriate chapters.

Permission to open a mine is granted by the issuance of a Mining Lease subject to certain preconditions and following a number of clearances. The mine plan must be cleared by the Empowered Standing Committee in the Department of Coal;

permission must be granted by the Coal Controller and the Directorate General of Mines safety (DGMS) must be notified. Concurrently prior requirements for surface rights, environmental and forest clearances must have been obtained.

One issue that relates to the extraction of coal is the conservation of coal which is a topic specified under both MMRDA and CMCDA. There exists in the Department of Coal, a Coal Conservation and Development Advisory Committee with the presumed mandate of ensuring coal conservation. The Committee has met infrequently to discuss coal conservation which is probably a reflection of the lack of a coal conservation policy. The requirement for coal conservation should not impinge on good mining practice in the light of the generally accepted principle that least cost energy resources should be utilised first as there may be no need to utilise the high cost resources as technologies may change.

The monitoring of mining operations for compliance with approved mining plans is currently non-existent.

Health and safety in mining operations are principles that are accepted world-wide. However they are rarely considered in the context of efficiency and profitability. The current legislation has been in place with only minor amendments for almost fifty years. In common with legislation world-wide from that period the legislation is largely prescriptive. As such it tends to stifle management incentive and impede performance.

The regulatory framework is reviewed under two broad headings – "Direct Impediments to Efficiency" and "Indirect Impediments to Efficiency". Direct impediments include delays in obtaining permissions/exemptions/approvals for various routine operations, the time required to obtain approvals for the introduction of new equipment and the lack of legislation for the operation of opencast mines. Indirect impediments include inefficiencies deriving from unclear demarcation of duties and responsibilities for owners, agents and managers; safety policies and regulations in need of review; restricted access accident inquiries; failure to follow through on the recommendations of safety conferences; and inadequate training in safety matters.

While occupational health needs are well met in the coal fields, there is a need to update the standards in view of the changing technology in the industry.

The main recommendations are that:

- A coal conservation policy and guidelines should be developed
- Regulations for opencast mining should be established
- In the longer term, a new Mines Act should be drafted to reflect modern approaches to health and safety in both opencast and underground mines.

V **Financial/Fiscal Matters.**

In reviewing the financial and fiscal framework the consultants have been cognisant (a) that this framework is largely not within the purview of the client, and (b) that the client had some reservations as to whether these topics were within the terms of reference. Consequently the fuller treatment is reserved for those aspects where the client has some authority e g royalty

The financial and fiscal framework should provide for:

(a) Equitable sharing of project benefits between the investor and the Government:
(b) An internationally competitive fiscal regime if foreign investment is desired:
(c) Stability of the tax regime.

The first provision is difficult as investors and governments have different objectives for a project. While the investor is primarily seeking return on investment. the government is seeking both tax revenues and other benefits e.g. employment. Frequently governments tend to try to maximise the direct tax benefits of a mining operation but this can be counter-productive as it will discourage the initial investment. Typically. the principal taxes imposed on the coal sector would include royalty and corporate income tax.

Financial issues include equity holding, joint ventures. and financial incentives for investors and lenders. Current legislation limits foreign direct investment in new projects to 74% and in captive mining projects to 100%. These provisions are welcome but it is noted that the MMRDA does not permit foreign companies to obtain mining rights. To date. there are no joint ventures between PSEs and the private sector. Current corporate restrictions on CIL require that CIL remain the majority partner in any joint venture. This provision discourages the private sector from seeking joint ventures. At present. there are no coal sector specific financial incentives. Consideration could be given to extending the benefits of infrastructure status to the coal industry on an interim basis pending formulation of financial incentives currently under consideration for the whole mining sector. Incentives for lenders are limited but consideration could be given to declaring the coal sector to be a sector that promotes social and economic welfare thereby making lenders to the sector eligible for a number of benefits.

Fiscal matters relate primarily to royalty and corporate taxation. The topic of royalty raise two primary issues – the basis and the rate. Currently royalties are assessed on an *in rem* basis i.e. on a per tonne basis. More commonly, royalties are collected on an *ad valorem* i.e. a percentage of the value of the product. Combinations of the two systems also exist. The *ad valorem* basis is preferred as. while it is not ideal. it does take some account of the fluctuating value of the commodity. Furthermore it does not require some arbitrary grading of the coal. Current royalty rates being paid in India average about 12% of the value of the product while international royalty rates are usually lower. It should be noted that in many countries. the owner of the minerals[1] in the ground. also derives income from other taxes. This is not currently the case in India.

Corporate income tax rates in India are higher than those obtaining in most coal mining countries. In addition, and perhaps more importantly, the deductions from gross income for the determination of taxable income are both fewer in number and less in percentage terms.

---

[1] In India. this is the States. A comparable situation exists in Australia and Canada.

Various other fiscal matters are reviewed. Included are double taxation agreements, ring fencing, tax stability and international competitiveness.

The main recommendations are that:

- Restrictions limiting the share in joint ventures with CIL subsidiaries should be removed.
- Coal mining should receive all financial benefits that are awarded to the mineral sector.
- Royalties should be subject to a detailed review as to mode of calculation and rate.
- If India wants to be internationally competitive, revisions to improve the fiscal regime for the investor should be made.

VI Labour/Trade Unions/Employee Welfare/Compensation.

The main elements of the regulatory framework as it relates to labour are statutory employment rights, trade union rights, the collective bargaining process, terms and conditions of employment, dispute resolution and contract labour. Many of these elements of the work arrangements reflect the development of a nationalised industry of many years.

There is a extensive legislation ensuring employee rights which are not inappropriate or unduly burdensome. However changes should be considered in three areas. Payment of bonuses no longer reflects the original intent of the bonus schemes. Bonus payments have become an entitlement. Settlement of grievances under the Industrial Disputes Act 1947, while sound in principle, can in practice be extremely slow – some cases take years to resolve. Currently employment rights are incorporated into many different pieces of legislation – more than eight in number. It would be preferable to draft a new Employment Rights Act.

Trade Union rights and liabilities are governed by the Trade Unions Act, 1926 which broadly follows the UK legislation of that period. This Act has a very low hurdle for registration of only seven members. It is accepted, even by union leaders that this level is too low. Legal immunities in the Act are such that strike action can be taken without the balloting of members. It would be desirable to require balloting prior to strike action as is the case across the EU. There is currently no statutory basis on which Trade Unions may claim the right to be recognised for bargaining purposes. Currently there is a great deal of uncertainty regarding membership in the Trade Unions which creates further difficulty with the decision to recognise any given union.

Collective bargaining for the coal industry is presently carried out within the Joint Bipartite Committee for the Coal Industry (JBCCI), a body called into being from time to time by the Department of Coal. JBCCI is constituted from the operating companies and the five major unions. The collective agreements, which emerge from JBCCI, are the National Coal Wage Agreements (NCWA). This arrangement has worked satisfactorily in the past but it fails to take into account the varying abilities of individual subsidiaries of CIL to provide the agreed benefits. In future, it will be necessary for coal producers to establish their own agreements based on ability and willingness to pay.

India has a comprehensive and highly developed system for the resolution of both individual and collective employment disputes. As liberalisation of the sector prompts a move away from the JBCCI, it is likely that a number of disputes will arise in the transitional period. The main problem for resolution of these disputes will lie with delays in the Labour Courts attributable to vacancies for Presiding Officers and failure to adhere to timetables.

There are presently restrictions on the use of contract labour in coal mines pursuant to a Notification under the Contract Labour (Regulation and Abolition) Act, 1970. These restrictions are damaging to existing producers and to the prospects of attracting new investment into the sector. This second point is very important as it is likely that a preferred entry into the coal sector – at least initially – for the private sector might well be through contracting.

The issue of uneconomic capacity will be of increasing importance as access to public funds is withdrawn. It will be necessary to employ the existing consultative process at mine level diligently, to design an adequate benefits package for redundant manpower, and possibly to set up a fund dedicated to creating new employment in coal field areas.

The main recommendations are:

- The law regarding employment rights should be codified.
- The threshold for Trade Union recognition should be raised.
- Responsibility for collective bargaining should pass to the CIL subsidiaries
- The restrictions, both statutory and contractual, on the employment of contract labour should be abolished

VII Environment.

A legal framework for the management of the environment was initiated in the early 1970s in India and now consists of:
(a) The Water (Prevention and Control of Pollution) Act 1974
(b) The Water (Prevention and Control of Pollution) Cess Act 1977
(c) The Air (Prevention and Control of Pollution) Act 1981
(d) The Environment (Protection) Act 1986
(e) The Public Liability Insurance Act 1991

A number of specific standards for air and water, which are to be maintained in India, supplement this legislation. However, ambient air quality standards, effluent standards, and noise standards for specifically for coal mines, developed by the Central Pollution Control Board (CPCB), have not yet been notified.

The environmental framework is reviewed specifically with respect to:

(a) Site and environmental clearance for mining projects.
(b) Restoration of degraded land in mining areas.

(c) Environmental protection during closure of mines.
(d) Monitoring and enforcement of various laws for environmental protection.

The review has confirmed that the legislation is, with minor exceptions, well suited to the management of the environment. Most difficulties arise from procedural inadequacies. There are many procedural requirements prescribed in various notifications and guidelines. These primarily relate to the requirements for consents to establish a mining project and the subsequent recurring consents to operate. While there are clearances unrelated to environment e.g. approval of a mining plan by DoC, two of the most important environmental requirements are a Public Hearing and an Environmental Impact Assessment (EIA).

The most serious environmental impact of coal mining is on the land. This land degradation can be attributed to abandoned mines, currently operating mines and future mining operations. Abandoned mines, numbering more than 500, are mostly in the Jharia and Raniganj coal fields. Various plans for the restoration of the degraded lands have been proposed but no major restoration has been undertaken. Various cost estimates have been developed but full analysis as to whether the restoration would be cost effective has not been completed. Restoration could be funded by a levy on coal production. Current and future operations are subject to conditions with regard to reclamation of the site after mining. However in practice the enforcement of this conditionality is lacking. In many countries, the operator of a coal mine is required to submit a bond/guarantee ,as a condition of operating, which will provide funds for the authorities to undertake reclamation should the operator fail to do so.

Mine closure is not adequately addressed in the current environmental requirements. Preparation for closure is something, which must be considered from the day the mine opens. There is a need to develop procedures that pertain to the environmental aspects of mine closure.

The monitoring and enforcement of environmental requirements is lax while at the same time penalties for failure to comply are nominal.

The main recommendations are that:

- The establishment of some form of Reclamation Trust Fund/Bond be a requirement for consent to operate a mine.
- Monitoring agencies should be strengthened.
- Monetary penalties for failure to comply with environmental requirements should be substantially increased.

VIII Forests.

The major Acts and their rules, guidelines, and policies which directly apply to the management of the Forests and Wildlife are:

(a) Indian Forest Act, 1927
(b) Wildlife Protection Act 1972 (as amended up to 1991) with its many Rules.
(c) Forest (Conservation) Act 1980
(d) Forest (Conservation) Rules 1981

(e) Environment (Protection) Act 1986 and Rules (discussed under the Environment Section).
(f) National Forest Policy 1988

The Forest Conservation Act and associated Rules had as an important objective the reversal of deforestation in India. The legislation covers dereservation/diversion of forest land, use of forest land for non-forest purposes, assignment of forest land and clearing of forest land. As coal mining is a non-forest use of forest, the provisions of this legislation are very important to the coal sector.

The important topics are:

(a) Diversion of Forest Land
    - Preparation and Submission of Proposals
    - Clearance Process.
(b) Compensatory Afforestation
(c) Forest Compensation (Cost-benefit Analysis)
(d) Schedule of Lands

Diversion of forest land is considered by the Central Government based on a proposal prepared to a prescribed format. While the data required for the proposal is reasonable, preparation of the proposal is time consuming. This is partly due to the amount of data required but also reflects the lack of knowledge at both the level of the coal company and the responsible authorities. Furthermore forest boundaries are frequently in dispute.

Compensatory afforestation is one of the most important stipulations in an approval for diversion of forest. Basically, there is a requirement that an equivalent area of non-forest land be identified by the project proponent and funds deposited with the State for implementing the compensatory afforestation. The two most significant problems are the difficulty in identifying land for compensatory afforestation and the failure of States to carry out the compensatory afforestation.

The diversion of State forest land reduces the area of forest available to the State for income generation. Many States have therefore started to require compensation from the project proponent for this loss of income and other incidental costs. Currently there are many variations in the methodology used for the computation of the compensation.

There is no provision for reversion of reclaimed land to the Forest Departments in a staged and/or partial process. Some areas are known to MoEF where mining will never be permitted but no schedule of these lands is available.

The main recommendations are:

- States should identify land suitable for compensatory afforestation.
- Clear guidelines should be issued by MoEF for determination of forest compensation.
- Partial and/or early reversion of forest land should be permitted.
- A schedule of lands where mining will not be permitted should be prepared.

IX Resettlement/Rehabilitation.

At the request of the client, a review of the current policies for resettlement and rehabilitation (R & R) was completed. The review, undertaken from the perspective of an investor, deals with R & R in the context of the impact on the planning process, land acquisition, the impact on operations and the impact on project viability.

R & R is a major challenge facing any investor in the coal sector. While there is no Central Government legislation or formal policy, some States have adopted legislation and others have adopted policies. Likewise some PSEs, including CIL, have R & R policies.

To the extent possible, the planning process should start at an early stage in close consultation with the affected people to minimise project impact. A key stage in the process is land acquisition from the point of view of compensation whether the compensation be cash, new land and/or employment. These matters must be settled as early as possible in the planning process.

Difficulties with R & R issues may have a severe impact on operations with consequent adverse financial results. R & R difficulties have been known to cause temporary mine closures and major modifications to mine plans. The difficulty of quantifying R & R costs at the feasibility stage is a deterrent to investment. It is proposed that a data-bank of R & R costing be established as soon as possible.

The main recommendations are:

- A National Policy for R & R should be adopted as a matter of urgency
- R & R planning should be integrated into mine planning from the earliest stages
- Coal India Limited, with DoC, should prepare a model to capture the true costs of R & R. This data should be publicly available.

X Marketing/Distribution/Transportation/Sales.

Coal has been considered a strategic mineral for over fifty years. Accordingly, for most of the period up to the present it has been under the Essential Commodities Act 1981 and the Colliery Control Order 1945 (CCO 1945). These two items of legislation have regulated the price, distribution, sales and utilisation. On 1st January 2000, the Colliery Control Order 2000 superseded the CCO 1945 and supposedly liberalised the price, distribution, sales and utilisation of coal. Such a move by the Government is in line with the gradual liberalisation of the coal sector. This liberalisation is evidenced by the move towards coal supply agreements by both producers and consumers.

CCO 1945 dealt at length with all aspects of the coal market from price through grades to distribution. CCO 2000 removes some of the provisions but fails to fully liberalise the commercial side of the coal sector. It retains the right of the Government to:

(a) Prescribe grades

(b) Set procedures for sampling
(c) Establish coal sizes
(d) Control production, and
(e) Set other parameters

These provisions do not contribute to liberalisation of the coal markets. The CCO 2000 appears to fulfil no useful function and is in fact a deterrent to investment. Even if CCO 2000 is withdrawn, the coal sector will still be subject to the various Colliery Control Orders of the States. Full liberalisation will require the withdrawal of both CCO 2000 and the State Colliery Control Orders. (It should be noted that the inclusion of coal as an essential commodity under the Essential Commodities Act empowers the Government to take whatever measures are deemed necessary with regard to coal markets in an emergency situation.)

Various suggestions have been made for the establishing some form of regulatory body for coal pricing. While this move would be directly contrary to the move towards liberalisation of the sector, a temporary independent regulatory body would assist the transition to a fully liberalised market. Coal supply contracts will obviate the need for such a body.

While transportation of coal is beyond the scope of this review, it is noted that rail transport costs severely impinge on the competitiveness of domestic coal in the energy market. In India, freight rates subsidise passenger fares. They do not, therefore, reflect the true cost of moving coal within the country. More specifically, rail freight rates in India have risen more than 20% in constant terms over the past six years. This is in marked contrast to international rail freight rates, which have been falling even in current terms over the same period. A further anomaly is that freight rates in India decrease only marginally with distance while in other countries significant rate reductions appear as the distance increases.

The funding for the construction of sidings is a controversial point. Clearly coal companies do not wish to be burdened with this capital expense and the Railways have no way to recover a "siding capital expenditure". The charging of freight rates above the prescribed "rupees per tonne-kilometre" of the tariff schedule is prohibited.

The most important recommendations are:

- Colliery Control Order 2000 should be withdrawn
- A temporary regulatory body should be set up for coal pricing during the interim period of transition to a fully liberalised economy.
- Rail freight rates should be rationalised
- Contractual fuel supply agreements should be the business norm

XI Institutions.

The role of Government in mineral sector development has been changing as economies are liberalised. From owner/operators, Governments have become administrators. Their more usual primary functions are now:

(a) Establishing sectoral policy and strategy
(b) Defining and enforcing norms and regulations

(c) Administering mineral rights
(d) Providing reliable regional geological information
(e) Protecting the environment
(f) Integrating sound social practices into the sector

The current institutional structure, while generally consistent with a structure for these functions, is accustomed to facilitating the operations of the PSEs and has relatively little experience in administering a sector with significant private sector participation.

Sector administration is split between the Central Government and the States. Important Central Government ministries are the Ministry of Mines and Mineral MoMM), the Ministry of Environment and Forests (MoEF) and the Ministry of Labour (MoL). The Department of Coal (DoC), located within MoMM, is the primary administrator of the coal sector. MoEF has a major role in clearing and monitoring the environmental requirements associated with the coal sector. The Directorate General of Mines Safety (DGMS), situated in MoL, has the primary responsibility for all matters related to health and safety in the sector.

In the States, the departments responsible for mining, forests and the environment are integrated into the approval process for mineral rights, the issuance of permits for operations, and the monitoring thereof.

The possible role of independent regulatory bodies for the coal sector is examined and it is concluded that there is no need for permanent regulatory bodies as has been suggested. However, the establishment of an independent regulatory authority on a temporary basis will assist in the smooth transition to a fully liberalised economy.

XII Conclusions and Recommendations.

The recommendations, which have been developed from the review of the existing regulatory framework fot the sector, are in many cases dependent on the policies to be adopted for the sector. Policy for the coal sector is currently in transition. On the demand side, some of the conditions for competition are already in place. On the supply side, the liberalisation of the sector is proceeding more slowly as the Government reportedly will continue to reserve discretionary powers with regard to private sector coal development. Similarly, the proposed criteria for access to coal reserves for the private sector are not consistent with the desire to attract new investment.

The three priorities for the review can be summarised as follows:

(a) Facilitate the operations of the existing public sector coal companies
(b) Evolve systems to encourage private sector participation
(c) Make the regulatory framework investor friendly.

The first priority primarily relates to administrative processes and is uncontroversial. There is scope for reduction of costs and operational constraints. The second priority will probably require some dismantling of the privileged position of the public sector companies to establish a more level playing field for the sector as a whole Full definition of policy issues and the extent and timetable for sectoral reform will need to be established to make detailed recommendations for the introduction of regulatory changes associated with this priority. The third priority can be achieved where regulatory reform does not raise competition issues as identified under the second priority.

The most important conclusions reached are:

(a) The establishment of an arm's length relationship between DoC and the operating companies would encourage the development of commercial practices in the coal companies
(b) The retention of CIL's current structure and ownership is incompatible with full liberalisation of the coal sector.
(c) The current policy of corporatisation implies greater autonomy for CIL's operating subsidiaries and opens a range of options including:
    - privatisation of individual subsidiaries, or parts of their operations. Flexibility in packaging assets and liabilities might allow disposals of currently loss-making activities – the ICICI report on ECL explores some of the options;
    - partial divestments to create public sector/private sector partnerships. Current restrictions on foreign investment may need to be reviewed to secure full value from this approach.
(d) The currently proposed criteria and process for the identification and release of coal blocks for private sector projects are flawed and would deter new independent operators from entering the sector on any significant scale.
(e) The use of contractors to carry out the full range of mining operations has become increasingly common throughout the world and should be encouraged in India.
(f) The issue of uneconomic capacity is urgent.
(g) The economic issues will heavily influence the likely extent and shape of private sector participation in the coal sector, and must therefore be taken into account in determining the Action Plan for regulatory reform.

Particular emphasis is placed on the need for time-bound procedures in the regulatory framework with provisions for deemed granting of clearances/requests in the absence of response from the government authorities.

Water Sector

Independent regulation in water supply and sanitation sectors

Water supply and sewerage are State subjects as provided in the Constitution of India; the Union Government only formulates guiding policies, sets standards, and provides technical and financial assistance to the states. At the local level, the 73rd and 74th Constitutional Amendments of India, urban local bodies are responsible for providing water supply in urban areas, and the Panchayati Raj institutions in rural areas. Hence, the Union Government cannot enact any law relating to these subjects and it plays an advisory role for the State Governments.

In 1991, just over 81% of urban population and about 56% of rural population had access to drinking water supply, while less than 65% of urban population and not even 10% of rural population had access to sanitation facilities (CSO 1998). Other problems associated with water supply are the presence of impurities and the supply being largely un-metered. Groundwater is being increasingly overexploited in some of the Indian states. Surface water, on the other hand, is being used either inadequately or inefficiently. In most urban areas, water supply is intermittent. In such metropolitan cities as Ahmedabad, Bangalore, Hyderabad, and Pune, water is supplied only for a few hours a day, For instance, in Ahmedabad the water supply is limited to 1–1.5 hours a day and in Pune, 2–4 hours. Estimates of average physical water losses in the system range from 25% to over 50%. (Pachauri and Sridharan 1998). Non-physical unaccounted for water (or 'administrative losses') is also likely to be two to three times the physical losses. The distribution losses of treated water range between 25% and 40% (World Bank 1999). An international comparison shows that access to safe drinking water for India is 75% as compared to Africa (67%), Latin America (90%), Asia Pacific (83%), and West Asia (87%) (World Development Indicators 1998).

Equally dismal are the sanitation facilities in India. Sewage from cities increased from an estimated 5 billion litres a day in 1947 to 30 billion litres a day in 1997 (Pachauri and Sridharan 1998). Of this, only 10% is treated. Only 70% of the population in Class–I cities[1] have access to basic sanitation services. Wastewater treatment efficiency, even in Class–I cities, is only 30% (CPCB 2000). The remaining untreated sewage finds its way into water bodies, making the water unfit to drink or even to use for bathing, and at the same time, affecting their ecological health. The lack of adequate sanitation facilities has also lead to severe health and environment impact due to presence of unhygienic conditions.

In light of the poor experience in these sectors in India, one of the objectives and priority areas of the Ninth five-year plan (1997–2002) of the Government of India is to provide adequate and safe drinking water easily accessible to 100% of population living in urban and rural areas. Similarly, the target for sanitation is that 60% of the population in urban areas and 30% of the population in rural areas must have access to sanitation facilities. To achieve these objectives the Planning Commission of the Government of India has estimated huge investment requirement for water supply and sanitation programmes. The India Infrastructure Report (NCAER 1996) had estimated an annual requirement of funds of Rs 280 billion for providing water supply and sanitation infrastructure for the urban population only for the period between 1996 and 2000. As compared with this, the total allocation for the schemes pertaining to Urban Water Supply and Sanitation during the whole ninth five-year Plan period (1997–2002) was Rs 186 billion (NIUA 1999).

However, inefficient collection of revenue by local bodies (40%–45%) coupled with inadequate and highly subsidised user charges for provision of services and high administration costs (18%–22%) has diminished the financial resources of the urban local bodies over the years, thus increasing their dependence on State governments and other external agencies for loans and grants. Hence, it is necessary to identify other sources of funding for these sectors, particularly the private sector.

Another major consideration for private participation is the continued drain on the exchequer. With greater emphasis on fiscal discipline, it is increasing becoming difficult for governments to continue funding such loss making ventures. In addition, the role of the state in provisioning of services that can be more efficiently provided by private operators is increasingly being questioned. However, these reforms cannot take place unless a proper legal and regulatory framework for such investment is created and developed which ensures a full cost recovery. This calls for innovative reforms in the regulatory oversight in the sector.

Scope for private sector participation

The following section outlines the recommended strategy for initiating private sector participation in the water and sanitation sectors in India. Here it might be practicable to consider a gradual approach. As was pointedout earlier, a greater degree of private participation would require a higher degree of regulation. A phased approach may also allow regulatory capacity to be built over time.

Phase I

A first step may be restructuring the water and sanitation department on a profit centre basis followed by corporatisation of the utility or separate joint venture companies to manage the water and sanitation system. This will help to bring the necessary commercial orientation. These water supply companies could then operate with assistance from a strategic partner.

Phase II

For the existing distribution network in large urban local bodies, the ROT mode of privatisation could be explored. Here, the existing distribution system would need to repaired and restored to its desired condition by the private operator. This could be considered for some of the smaller municipal corporations and larger municipalities. Wherever the distribution network has not been laid, as in the urban areas adjoining the Municipal Corporations, PSP could take the BOT form, wherein the private operator would also lay down the distribution network.

The informational constraints on PSP would be not strong here, in the sense that complete information on the layout of the network and its present condition could be collected during the process of building or rehabilitating. This kind of a process would nevertheless require substantial social acceptance and political commitment, which would need to be developed over a period. Again, the consumer base would have to be adequately large. Finally, a commercial rate of return and a stable regulatory framework would have to be ensured to attract private capital.

For local bodies that are not very large, sustaining commercial operations through the use of private entities can still occur if management and service contracts are given to the private sector in discrete activities like operation of pumping stations and water treatment plants, billing, etc. This option should be considered by all local bodies wherever it is not possible to introduce private sector participation in any of the other suggested modes. We especially recommend this route for the municipalities and some of the smaller municipal corporations, where the water supply situation is critical and it might be difficult to build support for PSP.

Phase III

A complete divestiture of the entire distribution network can be explored as an option for those sections of the distribution network that can be isolated from the rest of the network. Over time, the local body could divest its stake in the company, thus completely privatising the sector. However, this would require acceptability of the privatisation process and thus little social resistance to liberalisation. In addition, the consumer base would have to be sufficiently large to make commercial operations viable. This would also require a substantial information base on the physical characteristics of the distribution network to exist along with strong regulatory oversight of the sector.

Need for independent regulation

Increased private sector participation is being sought in the water and sanitation sectors in India. A fall out of the privatisation process is the likely increase in transaction costs, which have to be mitigated. The activities of the above monopoly service providers would also have to be regulated for protecting the interests of consumers. The need for independent regulation arising from these issues is discussed in this section.

Regulating monopolies

Fixed costs in the water and sanitation sector are very high compared to variable costs. Some components in the system show economies of scale, and tend to create natural monopolies. For instance, water capture from a particular source is likely to have natural monopoly characteristics. So is the water transmission and distribution system, which exhibits engineering scale of economies. Pumping from underground aquifers may not have natural monopoly properties; pumping from many wells can be organised into multiple and independent sources. However, pumping from one well can cause a drop of water level so that pumping at the other wells becomes more expensive. Thus, efficient exploitation of a single aquifer from many wells may require some form of centralised regulation of pumping. While water treatment plants in themselves may not have scale economies, treating water that is delivered from a single transportation system is likely to be most efficiently undertaken at a single site or near the end of transportation pipe. Thus, it is evident thatcapture, transmission, and treatment from each water source all have monopoly characteristics. Further, distribution is also a monopoly as also the sewerage collection network.

The activities of the above monopoly service providers would have to be regulated for protecting the interests of consumers. A strong regulatory framework, which would not only protect the interests of the investors, but also balance them with the public interest in general, would be called for. Such a regulatory framework has to be outside the existing Government set up, and should have an arms–length relationship with the Government as well as local bodies. Else, the requisite enabling environment which could ensure protection of consumer interests, generate consumer trust, ensure fair returns to the utility, attract private investment in the sector, and ensure transparency in governance, would not be created.

Reducing transaction costs

Competition is possible in the selection service providers for the right to supply such services wherein many players can participate in bidding. This would result in competition for the market instead of competition in the market. The terms and conditions of such services are generally outlined through detailed contracts. If the contract period is short, it is possible to specify every aspect of contractual details. If it spans a long period, it is difficult to write 'time–consistent' enforceable contracts for the entire concession period covering all contingencies that may rise. Where tariffs and relevant factors cannot be unambiguously set out, there would be a need for mid–term reviews. Another fall out of greater private sector participation is the likely increase in transaction costs, which have to be mitigated. This strengthens the case for an effective regulatory framework.

Insulating from political risks

Consumers of environmental services constitute a large proportion of voters, and these services are perceived as essential functions of the government. Hence, it is often argued that these services should subsidised. These considerations often compel many public authorities to advance short–term political objectives rather than long–term interests of consumers. Investors are also aware of this type of pressures as well as the consequent vulnerability of their long–term investment. If there is weakness in the credibility of the commitment to the regulatory contract, the private entrepreneur deflects such risk by either increasing the cost of capital thus leading to higher tariffs or by compromising on the quality of service that is provided. Therefore, the need for credible commitment to the contractual obligations over the entire contract period is paramount while introducing private participation. An independent watchdog can provide such commitments to regulatory contracts.

In addition, it has been observed that political interference in pricing results in low-level equilibrium (Savedoff et al (1999)) of low coverage, limited investment and poor quality service. Low-level equilibrium is often associated with high social costs, which includes a negative impact on public health. It also causes consumers to invest in generating private supplies at high cost and resulting in environmental damage. Again, independent regulation can correct such a situation.

Need for independence

As governments or their instrumentalities would continue to be major stakeholders in the sector, the authority which aims to balance the interests of various stakeholders, including the government or local bodies, has to be independent of the government or local bodies. Independence in the context of regulation means that the authority with the 'expertise' should have all the attributes of autonomy so that it can apply its expertise in accordance with the mandate and subject only to its charter as laid out in the instrument through which it was set up and the laws of the land.

Strategies for regulatory reforms

Given the need for independent regulation and the reform experiences of other countries, regulatory reforms in the water supply and sanitation sectors in India are suggested in this section. The guiding principles of the proposed reforms are the following[2].

- Universal access to water and sanitation services
- Improvements in the quality of service delivered
- Improvements in quality of water supplied and sewerage disposed
- Financial viability of the sector.

In India, there are at least two reasons why the regulator should be in place even before private sector participation is initiated in the sector in a substantial way. First, there is a need to improve the operational efficiency of the service providers by aligning the cost of supply with the tariff. This would make the operation of these services more sustainable and eventually more attractive to the private sector. Secondly, there is need to set standards of service, and enforce the same. The regulator should be able to take an independent view of this. Hence, it is desirable to position the regulatory authority in India before the sector is opened to private operators.

Activities to be regulated

There are six components in the water and sanitation delivery system namely capturing the sources, transmission (or conveyance) of water to a place, treating water, delivery of water to users, collection of waste water from users, and finally, treatment of waste water. Unlike other sectors, fixed costs in all these segments are very high compared to variable costs[3]. The above monopoly service providers are spread over entire states. It is thus logical that the jurisdiction of the regulatory authority should extend over complete states. In addition, the segments of the water supply system such as capturing services, conveyance of water and distribution of water, which have monopoly characteristics, should be subject to regulatory jurisdiction.

However, it must be noted that with the 73rd and the 74th Constitutional Amendments, these functions vest with the local bodies. Thus, any changes that are proposed should not violate the spirit of the 73rd and the 74th Constitutional Amendments. To ensure this, it is recommended that the regulatory reform process should be consultative and State Governments should establish a consensus with the local bodies that would fall under the purview of the independent regulator. This would be imperativegiven that the sector is socially and politically sensitive.

Tariff regulation

As stated earlier, monopoly service providers in each state include the following:

1. Capturing the sources
2. Transmission (or conveyance) of water to a place
3. Treating water
4. Delivery of water to users
5. Collection of wastewater from users
6. Treatment of wastewater

Regulation of tariff (or charges) as applicable to these monopoly service providers should be one of the primary functions of the regulatory authority. In effect, the regulatory authority would need to regulate tariff – bulk as well as retail for water and wastewater. However, while it would be desirable for the regulatory authority to regulate the retail charges, it may not be feasible, or practicable considering the large number of local bodies. In these cases, it is, however, possible for the regulatory authority to suggest principles for determination of water tariff. Such principles should be taken into consideration by these local bodies at the time of fixation of charges in their areas.

Regulating private sector participation

Under the existing legislations in India, the various bodies such as Corporations, Municipalities, or Panchayats are authorised to contract, if required, the delivery of environmental services to any person including private operators. The regulatory authority, being an expert body, should be in a position to develop generic terms and conditions of various concession agreements keeping in mind the interests of the consumers as well as those of private operators.

Since the regulatory authority would be recommending the terms and conditions of the concession agreement, it is desirable that the regulatory authority also monitors such terms and conditions over the duration of the agreement. The regulatory authority would act as an independent watchdog over the performance of the private concessionaire over the contract period.

Quality of service

Quality of service comprises of technical quality as well as standards of service to customers. With respect to technical quality, water supply and sewerage boards and urban local bodies in most states follow water quality standards as laid down by the World Health Organisation and the Bureau of Indian Standards of the Government of India. However, there is no specific provision in existing legislations that lays down and enforces water quality standards, and the existing service providers are at their discretion to adhere to the existing guidelines. There is, thus, a need to ensure that minimum standards of water quality are statutorily laid down and adhered to by different service providers. On the other hand, there are statutory standards for effluents under the Environment Protection Act 1986.

Since water is essential to life, and has to be provided to consumers with adequate quality, many countries such as UK have kept water quality under government's control, so as to set and ensure proper water quality standards. The Drinking Water Inspectorate under the Department of Environment, Food and Rural Affairs, UK, through its audit role, carries out annual inspections of companies, and checks the results of monitoring and the reliability of data on tests carried out by companies. In India, State Governments should continue to regulate water quality standards through the existing Public Health Engineering Department. For this, the Public Health Engineering Department needs to be strengthened so as to be able to lay down and enforce the minimum standards of water quality in the State. Else, State Governments may assign this function to the regulatory authority, which can develop and lay down the water quality standards through a transparent regulatory process.

Promoting economy and efficiency

Public service providers in water supply and sanitation services are not operating efficiently. They suffer from many weaknesses: inadequate planning, inability to become financially solvent through proper user charges, lack of management autonomy and accountability, lack of consumer orientation, lack of better accounting and financial management, etc. In Chile, National Water Regulator takes steps for making the public service providers efficient and viable through better accounting and management practices and other measures. In UK, the regulator promotes economy and efficiency of the water companies. If the sector runs inefficiently, it would go against the consumer's interest. It is, therefore, necessary that measures are taken to improve the sector by improving its efficiency and economy of operation.

Promoting competition

In India, as in many other countries, it may take time to introduce competition in the water and sanitation sectors in the real sense. It is, however, possible to provide a framework for introducing 'comparative competition' among the various service providers in local bodies. It could start initially with municipal corporations, and gradually expand to other local bodies. The regulatory authority can collect information on certain parameters, compare the same among various service providers, and set standards at a higher level, which could be comparable with the best performed utility at the national level or at the international level at a later date. This type of 'comparative competition' is being used in UK by OFWAT in bringing higher efficiency in the working of water companies, as well as to bring in economy of operation.

Adjudication of disputes

As stated earlier, with the introduction of new service private providers, there will be many players in the sector. While individual concession contracts would invariably incorporate a provision for dispute settlement between a developer and an agency, a framework for adjudicating disputes amongst different service providers is essential. Further, such fora must also address consumer issues, especially quality of services.

Summary of functions to be performed by the Water Regulatory Authority

In sum, the Water Regulatory Authority (WRA) should have the following functions:

a) The regulator should frame principles for determination of tariff for water services[13].

b) There should be a minimum standard for water qualityand service to be provided by various service providers to their consumers. The WRA[14] should lay down and enforce minimum standards. It should also monitor the above standards through surveys.

c) Promote economy and efficiency in the water supply services.

d) Facilitate competition in water sector.

e) Adjudicate disputes and differences amongst various service provides or / and between a service provider and a group of consumers.

f) Recommend generic terms and conditions of the new concession agreements in water sector.

g) Recommend terms and conditions of a specific concession agreement if required by State Governments.

h) Should monitor terms and conditions of all new concession agreements between developers and local bodies in water sector.

i) Aid and advise State Governments for developing a Water Use Policy, and monitor such annual water use.

j) Co-ordinate with other regulators such as State Pollution Control Boards for framing and evolving guidelines for sustainable water use in states.

So far, all the functions as indicated above used/are required to be exercised by State Governments or local bodies. This arrangement did not yield a satisfactory outcome. No substantial private investments took place in water sector. We have argued the case for independent regulation. This can be accomplished through enactment of independent legislation. This is called for due to the following reasons.

a) A new legislation will demonstrate State Governments' commitment to the reforms and would thereby reduce the risk perceived by potential investors

---

[13] In Phase II of the regulatory process, the WRA should also regulate water tariff as discussed in the earlier sections

[14] If the State Government intends to assigns this function to the WRA.

b) Introduction of a new legislation would eliminate the possibility of conflicting provisions and interpretations under different Acts

Further, the independent regulation through separate enactment will send a signal not only to potential investors but also to the public in general that State Governments are committed to protect public interest even in the event of private sector participation. Therefore, regulatory functions as stated above should be given to WRA through independent legislation.

---

[1] Those with a population of 100000 or more

[2] Adapted from Sukhatankar (2001)

[3] However, it may be noted that although there are economies of scale associated with operating a distribution network, there could still be competition for entry into the market, for instance the competition between operators for a concession license. Similarly, within a city, the distribution network could be divided into independent components and each given to a different operator.

Urban Transport

Transport

At a glance

- The contribution of the transport sector to the gross domestic product has grown annually by 7.12% between 1993/94 and 1997/98.
- The transport sector is the second largest consumer of commercial energy, next to industry.
- High-speed diesel and petrol contribute to 98% of energy consumed in the transport sector.
- Road transport is the most dominant mode of transport. Over 80% of passengers and 60% of freight are moved by road.
- Strategies towards improving energy efficiency and mitigating the environmental impacts of road transport include more stringent emission norms, improved vehicular technology, and cleaner fuel.
- One of the objectives of the Tenth Plan is to increase the scope of private participation in the transport sector.

Introduction

Transport plays a significant role in the overall development of the national economy. In 1997/98, the share of the transport sector in the GDP (gross domestic product) was 7.3% (520.02 billion rupees at 1993/94 prices). The contribution of the transport sector to real GDP has grown annually by 7.12% between 1993/94 and 1997/98. Of the total transport GDP during 1997/98, road transport contributed 60%, railways 22%, water transport 13%, and air transport 5% (Figure 1).

The GDP in the transport sector at current and constant prices is given in Table 2.56.

Energy intensity of various modes of transport

The transport sector is the second largest consumer of energy, next only to the industry sector. Commercial energy consumption in the transport sector, about 98% of which is in the form of HSD (high-speed diesel) and petrol, grew at the rate of 3.1% a year between 1970/71 and 1980/81. It grew at a much faster rate of 4.9% a year between 1980/81 and 1990/91 and at 5.6% a year between 1990/91 and 1997/98.

Among the various modes of transport, road transport is the most dominant in terms of its contribution to the GDP and energy consumption in the transport sector. Railway is the other energy-intensive sector with high contribution to the GDP. The energy consumption by various modes of transport is given in Table I.

The HSD consumption by various transport sectors is given in Table II.

Road transport

Road transport is the most dominant form of transport for people and goods in India. There has been a tremendous increase in not only the number of motor vehicles registered but also the road network. The latter has risen from 0.9 million km in 1971 to 2.47 million km (excluding Jawahar Rozgar Yojna roads) in 1997 (Table 2.62). Over 80% of passengers and 60% of freight are moved by roads (MoF 2001). Roads cater to all types of traffic. Long distance traffic is served by national highways and state highways, inter- and intra-district traffic by major district roads, feeder traffic connecting rural centres of production to market outlets by other district roads, and local traffic by village roads and urban roads. Augmentation and upgradation of road networks with private sector involvement has been one of the priority areas for the road transport sector as also envisaged in the Ninth Five-year Plan.

Road-based passenger transport has recorded high growth in recent years, especially since 1980/81. It is estimated that roads accounted for 44.8 billion passenger-km in 1951, which has since grown to 2515 billion passenger-km in 1996. Due to the increase in travel demand and the inefficient means of transportation, the consumption of fuel by the road transport sector has grown over the years. The consumption of HSD in the road transport sector has grown from 2.06 MT (million tonnes) in 1992/93 to 2.35 MT in 1998/99. Similarly, the petrol consumption in India has increased from 3.07 MT in 1990/91 to 5.57 MT in 1998/99. One of the major reasons for increased energy consumption in the road transport sector is that the travel demand in both passengers and freight traffic has increased rapidly (Figure 2). The share of roads in carrying passenger traffic in 1996/97 was about 80%. Also, the road infrastructure has not been able to cope with this upsurge in traffic volumes.

In freight traffic too, there has been a shift from rail to road (from 34.5% in 1970/71 to 60% in 1996/97). The freight traffic in 1996 was about 720 billion tonne-km, which has increased from 12.1 billion tonne-km in 1951 (MoST 1996).

Energy-use planning is a critical aspect of the transport sector. Besides being major consumers of energy, different modes of transport use different forms of energy having varying degrees of efficiency and intensity. In India, at present, diesel is the only fuel available for commercial vehicles. Also, most goods vehicles in use are two-axle rigid trucks, which lack sophistication in techno-logy and are not energy-efficient. The present modal split contributes to fuel inefficiency. Trucks are doing long hauls, which should normally be performed by the Railways.

Urban transport

The transport sector in urban areas has major problems due to rapid growth in the number of motor vehicles in the cities, far outpacing the growth in the urban population. The percentage of private vehicles (two-wheelers and cars) to the total number of registered vehicles in India has increased from 65% in 1971 to 82% in 1998. In the absence of any integrated urban transport policy, there has been a rapid growth in the share of personalized vehicles in the last two decades. The public transport system has not been able to keep pace with the growing demand in travel, resulting in the use of more personalized modes of transport in the urban areas, which leads to energy-inefficient means of travel. The per-seat-km energy consumed by a car is approximately five times higher than that of a bus. Poor road quality and poor maintenance of roads in urban areas have further obstructed the smooth movement of traffic, leading to congestion, which also increases the energy consumption in the transport sector. In the absence of adequate public transport and restraint and demand management measures, the occupancy rate of personalized vehicles in urban areas is very low, further increasing the energy intensity of passenger transport. Due to the increase in travel demand and inefficient means of travel, the fuel consumed by the road transport sector has also increased (Table 2.57).

Policy developments

With economic liberalization in the 1990s, new small-segment and fuel-efficient cars entered the Indian market, giving competition to cars running on the old, inefficient vehicular engine technology that was prevailing in India during that time.

The Eighth Five-year Plan suggested a three-pronged strategy for the conservation of energy in the transport sector.

- Give due weightage to energy consumption in the choice of mode of transport
- Promote energy-efficient modes by phasing out the old, obsolete units and inducting efficient state-of-the-art systems
- Improve the riding quality of vehicles
- Encourage multi-axle vehicles
- Discourage overloading of vehicles
- Reduce transport intensity.

The major policy developments in the road transport sector that help reduce the energy consumption aim at the following aspects.

- Improving vehicular technology and stringent emission norms
- Introducing cleaner fuel quality
- Promoting alternative fuels.

Improved vehicular technology and stringent emission norms

Vehicular emissions standards in India have been progressively tightened over the years, the details of which are provided in Table III. This has led the manufacturers to introduce more fuel-efficient engine designs, which would reduce the emission levels.

The use of catalytic convertors has been made mandatory since April 1995 in four metro cities and since 1 September 1998 in 45 cities. New passenger cars in Chennai, Delhi, Kolkata and Mumbai are allowed to register only if they are fitted with catalytic convertors. Emission norms for such vehicles had also been notified under Motor Vehicle Rules during January 1998. (CPCB 2000)

While there has been substantial progress in improving emission characteristics of vehicles in India, it is well recognized that current vehicle technologies in India are inferior compared to those in the developed world, especially for heavy-duty diesel vehicles. In India, diesel vehicles do not have particulate traps, which help to reduce the emissions of particulate matter. Buses are built on a truck chassis and designed for optimal speeds that are possible only on highways and not within the city. The largest segment of the vehicular fleet, namely two-wheelers, mostly uses the highly polluting two-stroke engine.

Cleaner fuel quality

Unleaded petrol has been introduced in the country from 1 February 2000. The sulphur content in diesel was reduced from 1% to 0.5% in 1996 and was further reduced to 0.25% for metro cities and for the Taj Trapezium (the area around Taj Mahal) in 1997. In September 1999, the supply of diesel with sulphur content of 0.05% in Delhi for public transport and with sulphur content of 0.25% to other parts of the country was commenced in addition to the supply of ordinary diesel. As per the Supreme Court order, diesel with 0.05% sulphur has been supplied in National Capital Territory of Delhi and the National Capital Region since 30 June 2001. The developments in upgradation of fuel quality are given in the Table IV.

On 1 April 1999, the specifications for 2T oil became effective. To prevent the use of 2T oil in excess of the required quantity, premixed 2T oil dispensers have been installed in all petrol stations of Delhi. Sale of loose 2T oil has been banned since December 1998 (CPCB 1999). Further steps have been undertaken to check fuel adulteration by establishing independent autonomous testing centres/systems for fuel certification, including the monitoring of fuel quality at retail outlets.

The committee to formulate Auto-Oil Programme for the year 2005, constituted by the Ministry of Environment and Forests, has recommended future transport fuel quality in India (Table V).

Liquid fuels sold in India have less stringent specifications compared to those sold in other parts of the world. For example, the sulphur content in diesel sold in India is higher than that of diesel sold in the developed world. Recently, the government has tightened the fuel quality standards. However, the constraint is in terms of financial resources to build the required capability in the refineries.

Alternative fuels

A CNG (compressed natural gas) pilot programme was launched by GAIL (Gas Authority of India Ltd) in 1993 in Delhi, Mumbai, Surat, and Vadodara. The programme predominantly aimed to convert petrol-using vehicles into vehicles using CNG as a fuel. The programme has had limited acceptance among the consumers due to inadequate supply of CNG, high cost of the conversion kit, and limited access to distribution outlets. Since December 1996, it has been made mandatory for all government vehicles to fit the 'CNG kit' or catalytic convertors. Also, these were exempted from customs duty in order to promote these kits. LPG (liquefied petroleum gas) is now being permitted as a transport fuel in India through amendments in the Motor Vehicles Act. Propane is also being promoted as an automobile fuel. There are three propane filling stations in NCT-Delhi as of March 2000 (CPCB 2000). Efforts have now been made to use battery-operated vehicles/electric vehicles for intermediate public transport and buses on a trial basis.

The government has initiated pilot projects on ethanol-petrol in Maharashtra and Uttar Pradesh. Five-per cent ethanol has been blended with petrol and it has been introduced in 300 outlets. Other than the pilot projects, R&D studies are also undertaken to monitor the impacts of ethanol-petrol blend fuels on various vehicles.

Very recently, the government has taken decisions to blend 5% ethanol with petrol. This will be implemented in two phases. During the first phase, Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Punjab, Tamil Nadu, and Uttar Pradesh would be covered and during the second phase, the rest of the country. The government has also sanctioned 40 million rupees for R&D related to blending of ethanol with diesel.

Phasing out grossly polluting vehicles

In Delhi, commercial vehicles that are more than 15 years old are not allowed to ply on roads. Registration of new auto-rickshaws with a front engine has been banned from May 1996 and the registration of old defence service and government auctioned vehicles has been banned from April 1998. Other measures envisaged include replacement of all pre-1990 autos and taxis with new vehicles that use clean fuels and not allow eight-year old buses to ply except on CNG or other clean fuels (CPCB 2000).

The turnover rate of personal vehicles in India is low and the progressively stricter mass emission norms for new vehicles will have only limited impact. It is, therefore, necessary that there should be policy initiatives with regard to the 'in-use' vehicles as well. So far, these initiatives have largely been directed at commercial vehicles by way of not allowing those of a certain vintage to operate on city roads or requiring them to be retrofitted to use cleaner alternative fuels. The strategies for making 'in-use' vehicles less polluting would revolve around mandating stricter emission standards coupled with a requirement for periodic certification.

Review of draft approach paper to the Tenth Five-year Plan

The approach paper to the Tenth Five-year Plan focuses on improving the national highway rather than extension of the network itself. Top priority is given to ongoing work like the Golden Quadrilateral and North-South corridors. Preliminary actions will be taken to construct expressways where they can be commercially justified.

The focus will be on improving the road transport operation by rationalizing the road transport taxation structure, restraining the overloading of trucks, control of encroachments and unplanned ribbon development, and promoting road safety. Emphasis will be placed on private sector parti-cipation in improving the road transport operation, particularly in rural areas, without compromising on road safety considerations. Linking up all villages with all-weather roads is also to be targeted in the Tenth Plan (Planning Commission 2001).

Railways

Railways have traditionally played a dominant role in the Indian transport sector. However, despite being more energy-efficient, their share in freight and passenger traffic has declined over the years as there has been a significant shift to road transport from the mid-1980s onwards. In 1970/71, 67% of the passenger traffic was carried by roads as compared to 80% in 1996/97. This shift has manifested itself in the increasing number of vehicles on road and a higher rate of utilization of these vehicles.

There has been a shift from rail to road in freight traffic too. The shift of freight movement from rail to road has taken place despite railways having the advantage of higher speeds, bulk freight movement, carrying potential, economical land-use, etc. The reasons for this shift are listed below.

- The road sector has seen rapid growth even with very little capital investment from the government. Also private sector investment is spread out over a large population. The Railways are facing a tough competition from the trucking industry, where now the private sector provides these services. The commercialization of the road sector has increased the efficiency, reliability, and safety of services provided by them.
- The budgetary support for the Railways has declined to 23% of that specified in the Railways Plan in 1997/98 from 75% in the Fifth Plan. Thus, the Railways have been made to rely on its own revenue earnings. The resultant market borrowing has put a constraint on the ability of the Railways to raise resources internally due to a rising interest burden, thus delaying development projects.

In terms of gross tonne-km, electric and diesel traction hauls 59.4% of the freight traffic. Of passenger services, 99.9% is operated by diesel or electric locomotives and only 0.1% by steam (MoR 2000b). The energy consumed by diesel and electric traction in 1996/97 is given in Table VI.

Policy developments

The focus of the Ninth Five-year Plan is on strengthening the capacity of the Indian railway system as a prime carrier of long-distance bulk freight and passenger traffic. To achieve this objective, the Railways is focusing on the following policy options.

Augmentation of high-density corridors

The transport system is characterized by a system of HDCs (high-density corridors) linking major urban areas. Augmentation of capacity of the HDC system continues to receive high priority. Upgradation of passenger and freight terminals is also necessary to augment the capacity on the busy sections of the Indian Railways, leading to the generation of adequate rail capacity for handling the increasing freight and passenger traffic, with special emphasis on the development of terminals.

Reducing speed differentials

The Railways is focusing on reducing the speed differentials between freight and passenger services by raising the speed of freight cars. This will improve the traffic throughput in the system.

Upgradation of locomotive technology

Railways is in the process of modernization and upgradation of the rail transport system. Locomotive technology is being improved by adopting the latest locomotives, as well as upgrading the existing fleet through retrofitment. Mechanization of track maintenance is another high-priority area. This will reduce costs, improve reliability, safety, and quality of service to customers. New wagons fit for high speeds (100 km/h) have also been procured. These wagons have considerably reduced transit time and improved quality of service to customers.

Encourage multimodal transport

To promote intermodalism for safe, efficient, customer-friendly, and faster movement of goods, the focus is on increasing inland container depots. The strategy is to create rail hubs with sufficient warehousing facilities and accelerate the programme of containerization, not only to promote intermodal transport, but also to increase its market share and cater to high-value traffic.

Increase carriage of high-rated non-core piecemeal traffic

Railways are basically carriers of bulk commodities such as coal, iron ore, cement, fertilizers, foodgrains, and POL (petroleum, oil, and lubricants), etc. However, to increase the carriage of high-rated non-core piecemeal traffic, the Indian Railways has evolved the following marketing strategies.

- Leasing brake vans in mail/express and passenger trains to get assured traffic at a high rate
- Clearing modified traffic in modified vans
- Leasing parcel vans to clear valuable parcel traffic with significant freight potential
- Containerizing 'wagon load' and 'less than wagon load' traffic.

Privatization

Railways is now moving towards privatization of associated and supporting services such as catering services and maintenance of platforms and stations. They have also encouraged the formation of joint ventures to implement financially viable projects through public/private participation, especially for strengthening basic infrastructure in the area of line capacity, augmentation, rail connectivity to new private ports, and development of private terminals.

Other than this, the Railways has decided on the leverage of huge assets, such as right of way, surplus land, and air space, for generating additional resources.

Draft approach paper: Tenth Five-year Plan

The approach to Tenth Five-year Plan is to gradually cut the cross-subsidization of passenger fares from freight. They have also recommended the establishment of an independent Rail Tariff Regulatory Authority. Emphasis has to be given to all ongoing projects by ensuring adequate resources. Capacity is to be improved on the Golden Quadrilateral by undertaking doubling, opening up of alternative routes through new lines, gauge conversion, etc.

Another target of the Tenth Plan is to enlarge the scope of private sector participation in acquiring the rolling stock through innovative mechanisms (Planning Commission 2001).

Civil aviation

Civil aviation consumes less than one per cent of the total energy consumption by the transport sector; therefore, the policy interventions related to energy consumption are not significant. To meet the growing travel demand, upgradation and improvement of airport infrastructure and capacity augmentation have been the major thrust areas for the Department of Civil Aviation. At present, there are 449 airports/airstrips in the country. Among these, the AAI (Airports Authority of India) owns and manages 5 international airports, 87 domestic airports, and 28 civil enclaves at defence airfields and provides air traffic services over the entire Indian airspace and adjoining oceanic areas. In 1998/99, these 120 airports/civil enclaves handled 0.42 million aircraft movements involving 24.17 million domestic and 12.83 million international passengers and 0.22 MT of domestic and 0.47 MT of international cargo. 51% of the traffic was handled at the international airports at Mumbai and Delhi. Presently, various airlines are operating only through 61 airports. The remaining are lying unutilized, at best handling occasional aircraft operations. The turnover of the AAI was 15.91 billion rupees *for the year that* ended March 1999.

The reforms in this sector have been to strengthen the institutional and regulatory framework so as to ensure safety and security. Private sector participation is also very essential to ensure large investments for proper provision and maintenance of the airport infrastructure. Therefore, the Government of India, in line with its policy of liberalization, decided to corporatize Chennai, Delhi, Kolkata, and Mumbai airports in order to attract the much-needed capital for expansion and modernization of these airports to world-class standards.

Also, the government has decided to set up a parallel cargo terminal at the Indira Gandhi International Airport by way of a joint venture between the AAI and the private sector, in order to offer an option to users so as to achieve better services and increased efficiency through healthy competition.

Ports

India has a 7516.6-km-long coastline (including 1962 km of Andaman and Nicobar Islands), has 12 major ports (of which 11 are operational and the 12th is under construction), and 148 minor ports. The traffic handled by the major and minor ports during the last five years is given in Table VII.

During 1999/2000, approximately 81% (272 MT) of the total traffic was handled by the major ports, as against the total capacity of 258 MT. During the same period, the total cargo movement was about eight per cent more than the previous year. This implies that there is a need to augment the port capacity. A long-term plan for the port sector for the year 2020 is under finalization.

Policy development

The Government of India has taken policy initiatives to improve exports by restructuring the ports. Accordingly, in October 1996, policy guidelines were issued, which provided for private sector participation/investment in the following areas.

- Leasing out existing assets of the port
- Creating additional assets such as
  - construction and operation of container terminals
  - construction and operation of bulk, multipurpose, and specialized cargo berths
  - warehousing, container freight stations, storage facilities, and tank farms
  - cranage/handling equipment
  - setting up of captive power plants
  - dry-docking and ship repair facilities
- Leasing of equipment for port handling and leasing of floating crafts from the private sector
- Captive facilities for port-based industries.

Draft approach paper: Tenth Five-year Plan

The major target of the Tenth Plan is to corporatize the major ports within a short period of time, induce private sector investments, and to achieve a capacity of 11-15 MT through productivity improvement during the plan period (Planning Commission 2001).

Coastal shipping

The share of coastal shipping has increased from 0.2 million GRT (gross revenue per tonne) in 1971, to 0.6 million GRT in 1998. Presently, the cargo moved by coastal shipping comprises coal, clinker, cement, crude oil, POL, and iron ore. Over the years, the general cargo, which is an important component of coastal trade, has been weaned away by other modes of transport. The development of coastal shipping has been slow despite the entire coastal trade being reserved for Indian vessels. The problems and issues constraining for the development of this sector are as follows.

- Coastal ships are subjected to an unnecessarily high cost structure due to their compliance with the same standards as those for ocean-going vessels. They compete with overseas vessels for the same port space and high manning scales at par with overseas shipping.
- Complicated customs procedures applicable to international trade are applied even to coastal movements, causing delays and increasing costs (MoST 1999).

Due to these impediments, ship owners are reluctant to acquire dedicated coastal vessels, thus leading to obsolete technology and lack of skilled labour and manpower to manage coastal shipping. This has led to coastal shipping not being regarded as a lucrative field for investment as compared with other shipping enterprises, leading to its stunted growth.

Policy developments

The development of coastal shipping in the country warrants that it be accorded a status on par with other modes of domestic transport. Recognition of coastal shipping as an infrastructure industry has been recommended in various fora. Therefore, a package that includes the creation of infrastructure facilities, simplification of customs procedure, and fiscal incentives for development of coastal shipping is essential to remove the various impediments hampering the growth of coastal shipping. The government has taken measures to develop coastal shipping. The present policy of the government is to take necessary legislative and fiscal measures for its development. The major policy developments initiated by the Ministry of Shipping are given below.

- Create separate berth facilities and additional infrastructure at ports for coastal shipping
- Exempt vehicles carrying coastal goods from sections of the customs act so as to reduce the customs procedures for coastal shipping. and also reducing the charges and thus the total cost.

Upgradation of port infrastructure will involve huge investments, requiring support from the private sector. The government's efforts will be supplemented by the efforts of the private sector. Guidelines have been laid down for private sector participation in the port sector.

The shipping industry is conscious about conservation of energy and has been looking at ways and means to achieve this. Fuel oil is the main energy source for ships. The industry has been trying to replace its old vessels with those having new hull designs, self-polishing paints, and other improvements in the propeller machinery, which help reduce resistance, thereby giving more speed per horsepower to the ships (MoST 2000b).

Inland water transport

Inland water transport (IWT) is the most efficient mode of transportation from the point of energy consumption, lower cost of transportation, and environment friendliness. Notwithstanding these advantages, IWT in India has gradually declined due to various reasons, the lack of investment for creating infrastructural facilities being the major contributory factor. The energy consumed by various modes of transport is given in the Table VIII.

The energy consumed by IWT is more compared with electric traction, but less than what is consumed by road transport. It also has the advantage of having low capital cost of infrastructure development since the basic right of way is the river channel.

However, at present, IWT forms a very small part of the total transport network. In terms of tonne per kilometres, its share is less than one per cent. The freight carried by IWT has declined from 2.42 MT in 1993/94 to 1.88 MT in 1996/97. The main reason for the small share of IWT is its spatial limitations. Besides, most of the waterways suffer from navigational hazards such as shallow water and narrow width of channel during dry weather, siltation, bank erosion, absence of terminal infrastructural facilities, and inadequacy of navigational aids. There is a need to remove the constraints faced by these modes of transport so that they become more viable alternatives to surface modes.

The north-eastern region offers immense potential for the development of IWT as a cheap, viable, and eco-friendly mode of transportation for various commodities through Bangladesh. IWT offers a bright scope for evolving an inter-modal approach in its development.

The Indo-Bangladesh protocol on inland water transit and trade is valid till October 2001. The principal activities of this agreement are as follows.

- Transportation of cargo through inland waterways
- Construction and repair of IWT vessels
- Repair of ocean-going vessels
- General engineering work.

The two governments agreed to share the inter-country trade and transit cargo on an equal tonnage basis by the vessels of signatory countries to and from ports of call, including extended places of loading and unloading under customs formalities and supervision.

Policy developments

Recognizing the constraints faced by IWT and its potential for growth, the thrust is on making IWT an acceptable mode of transportation. The basic requirements identified are the reduction in cost and time of transportation and enhancement of safety and reliability.

There is an opportunity now to link the inland waterways with ports, particularly minor and intermediate ports, so that cargoes emanating from the hinterland can be transported directly to the ports through inland waterways without any diversion to roads. Such a programme will benefit both the shipping and the IWT sectors, and if combined with an attractive incentive system, large investment from the private sector can be infused, as the assured cargo traffic will make the package commercially profitable.

To give priority to the development of IWT in India, the Government of India decided to give a major thrust to the development of waterways. In pursuit of this policy, the following three waterways have been declared as national waterways.

- *National Waterway No. 1 (1620 km)* The Ganga–Bhagirathi–Hooghly river system connecting Haldia, Kolkata, Farakka, Semeria, Patna, Varanasi, and Allahabad
- *National Waterway No. 2 (891 km)* The Brahmaputra river connecting Dhubri, Guwahati, Tezpur, Dibrugarh, and Sadiya
- *National Waterway No. 3 (205 km)* The West Coast Canal system stretching from Kottapuram to Kollam, Champakkara canal, and Udyogmandal canal.

In addition, the National Transport Policy Committee has identified 10 more waterways that can be declared as national waterways.

- The Ganga–Bhagirathi–Hoogly river system
- The Brahmaputra
- The West Coast Canal
- The Sunderbans
- The Godavari
- The Krishna
- The Mahanadi
- The Narmada
- The Mandovi, Zuari rivers and Cumberjua Canal in Goa.
- The Tapi

Multimodal transport

Multimodal transport has emerged as one of the important forms of transportation of goods. Containerization has helped in developing multimodal transport. It is an effective, efficient, and safe means of transporting goods, combining roads, railways, and ports. Multimodalism is recognized the world over as a vital national and international requirement. It is particularly significant for India domestically, because of the vast size of the country and interdependence of different areas and regions for agricultural, consumer, and industrial goods, and internationally due to the emerging trend of globalization. Each mode of transport has its own role to play in an integrated multimodal transport system. Although railways are energy efficient, they cannot reach every part of the country. Roads have a distinctive role to play in such cases, as they offer a door-to-door service. Therefore, to encourage water transport, there is a need to integrate the IWT system with coastal shipping, including its easy linkages with the ports.

Road transport consumes maximum energy in the transport sector. Therefore, as far as possible, if the goods are transported by the railways (which is a more energy-efficient mode) and IWT (where transportation by railways is not possible), the total energy consumed in transporting goods from one destination to another will be comparatively less.

The government promulgated the Multimodal Transport Act in 1993. However, multimodal transport still faces certain problems (listed below) that prevent its growth and development (MoCA 1999).

- Complex procedures and excessive paperwork make it difficult to tranship goods from one mode to another mode within the country.
- Lack of coordination between various government departments leads to the issue of segment transport receipts for each mode instead of provision of a combined transport document as per the provisions of the Act.
- Air transport is still not recognized as a multimodal transport in the Act.
- There are a limited number of inland container depots; the few that exist are concentrated around Bangalore, Chennai, and Mumbai.

The need to promote containerization has been spelt out in various policy documents. While containerization has been increasingly adopted the world over, the process has been slow in India. CONCOR (Container Corporation of India) Ltd provides multimodal containerized cargo handling and transport services. From about 155 000 TEUs (twenty-feet equivalent units) handled in 1992/93, the traffic throughput has reached 722 000 TEUs, an almost five-fold increase in five years (CONCOR 1998).

The Railways has identified multimodal transport as a technique to recapture its share in the general cargo traffic that it lost to the road sector (MoR 1993). The Railways can become the principal partner and a multimodal transport operator or just provide haulage on the rail portion. The efforts of the Railways in this regard have focused on raising the container traffic handled by CONCOR.

References

Bose R K. 1998
Automotive energy use and emissions control: a simulation model to analyse transport strategies for Indian metropolises
Energy Policy 26(13)· 1001–1016

Bose R K, Sundar S, and Nesamani K S (eds). 2000
Clearing the Air: better vehicles, better fuels
New Delhi: Tata Energy Research Institute. 345 pp.

CONCAWE. 1999
Potential of exhaust after treatment and engine technologies to meet future emissions limits: conservation of clean air and water in Europe
Brussels: CONCAWE [Report no. 99/55]

CONCOR (Container Corporation of India Ltd). 1998
Annual Report 1997/98
New Delhi: CONCOR

CPCB (Central Pollution Control Board). 1999
Auto emissions
Parivesh Newsletter 6(1): 1–16

CPCB (Central Pollution Control Board). 2000
Air quality status and trends in India
New Delhi: CPCB, Ministry of Environment and Forests

CPCB (Central Pollution Control Board). 2001
Fuel quality: 2005
New Delhi: CPCB

CSO (Central Statistical Organization). 2000
National accounts statistics
New Delhi: CSO, Ministry of Planning and Programme Implementation

IIP (Indian Institute of Petroleum). 1994
Vehicle emissions and control perspectives in India: a state of the art report
Dehra Dun: IIP.

Inland Waterways Authority of India. 1999
Annual Report 1997/98
New Delhi: Inland Waterways Authority of India

MoCA (Ministry of Civil Aviation). 1999
Report of the expert committee on an integrated approach to the movement of goods in international trade
New Delhi: MoCA, Government of India

MoF (Ministry of Finance). 2001
Economic Survey 2000/2001
New Delhi: MoF, Government of India.

MoPNG (Ministry of Petroleum and Natural Gas). 2001
Indian Petroleum and Natural Gas Statistics 1999/2000
New Delhi: MoPNG, Economic and Statistics Division, Government of India.

MoR (Ministry of Railways). 1993
Railway Board: railway fare and freight structure committee report
New Delhi: MoR, Government of India

MoR (Ministry of Railways). 2000a
Indian Railways Annual Statistical Statements 1998/99
New Delhi: MoR, Government of India

MoR (Ministry of Railways). 2000b
Indian Railways Yearbook 1998/99
New Delhi: MoR, Government of India.

MoST (Ministry of Surface Transport). 1996
Report of the working group on road transport for the Ninth Five-year Plan (1997–2002)
New Delhi: MoST

MoST (Ministry of Surface Transport). 1999
Indian Shipping Statistics 1998
New Delhi: Transport Research Wing, MoST, Government of India

MoST (Ministry of Surface Transport). 2000
Basic Port Statistics 1999/2000
New Delhi: MoST, Transport Research Wing, Government of India.

MoST (Ministry of Surface Transport). 2000a
Handbook of Transport Statistics 1998/99
New Delhi: MoST, Transport Research Wing, Government of India.

MoST (Ministry of Surface Transport). 2000b
Annual Report 1998/99
New Delhi: MoST, Government of India.

Planning Commission. 1980
Report of the National Transport Policy Committee
New Delhi: Planning Commission, Government of India

Planning Commission. 2001
Draft approach paper to the Tenth Five-Year Plan (2002–2007)
New Delhi: Planning Commission, Government of India

SIAM (Society of Indian Automobile Manufacturers). 2000
Auto industry rolls out future emission norms for India
Viewpoint: A Quarterly Newsletter of the SIAM II(1): 2–4

Oil & Gas Deregulation

TERI, New Delhi

R K Narang, Ardhendu Sen, and Leena Srivastava

Background paper: issues in the deregulation of the oil and gas sector

Transition to a liberalized environment: experiences and issues in regulation 411–426

The petroleum industry in India has been closely regulated: the GoI (Government of India) has subjected each link in the chain – E&P (exploration and production), refining, marketing and distribution – to controls and checks. The oil crises of the 1970s were major drivers in prompting governments all over the world to intervene in the oil sector. The intervention was especially pronounced in oil importing countries such as India. As a result of the price hike, the Indian oil industry underwent a metamorphosis. The principle of import parity in pricing gave way to an APM (administered pricing mechanism) with an attendant command and control system. The need to ensure oil security led to the acquisition of foreign oil companies that virtually controlled the oil industry in the first half of this century. Notable among these were Burmah Shell, ESSO, Caltex, and Indo-Burmah Petroleum. The rationale was that on their own, markets would not provide supply security or lead to socially desirable outcomes.

Under the APM, all entities are assured a minimum return on their investments. While the ONGC (Oil and Natural Gas Corporation Limited) and OIL (Oil India Limited) are allowed a return of 15% on employed capital, the downstream companies get 12% (post tax) on their net worth.

Though there are incentives for exceeding the norms laid down by the OCC (Oil Coordination Committee), it is widely accepted that the system neither fosters innovation nor offers any significant incentive for efficiency. Some of the criticisms of the system are enumerated below.

- It puts a low premium on innovation and efficiency.
- It leads to non-optimal investment decisions that are not in conformity with market dynamics.
- Since the government controls product prices, political forces exert pressure on price levels. In the electricity sector, this has led to non-viability of most state electricity boards and in the oil sector, the result was an oil pool account deficit of 150 billion rupees.
- With an oil–gross domestic product elasticity of more than unity, India has been one of the world's fastest growing oil

markets. Subsequent to the 1991 reforms, oil consumption has been growing at a rate of over six per cent. Although there has been a slowdown in the current year, India is still the fourth largest oil market in Asia with an annual consumption of over 85 MT (million tonnes). The growth in demand is expected to be robust in the next decade and OCC projections indicate that demand will reach 155 MT by 2006/07. Meeting such a demand would require massive investment, far beyond the scope of the public sector. This calls for the involvement of the private sector, both domestic and foreign.

Criticism of oil sector regulation and the need to attract private investment has caused far-reaching changes in the regulation of the oil industry. The objectives of this deregulation are outlined below.

- Increase competition in the industry by allowing the entry of more players. Only a competitive market can spur oil companies to deliver value to consumers and ensure the international competitiveness and long-term survival of the Indian oil industry.
- Attract private capital which, in turn, requires that market forces be allowed to operate freely.
- Remove constraints on economic pricing of products and services to enable the industry to earn a reasonable return on investment.

It should be noted that India was not alone in introducing these reforms. Deregulation has swept the oil sector around the world.

To kick-start the deregulation process in the petroleum industry, the GoI appointed the R Group with experts drawn from the government and the private sector. The R Group suggested major policy changes in its report submitted in 1996. The recommendations included the dismantling of the APM and tariff reforms. The government accepted these recommendations and took a series of measures over the last two years, which have changed the regulatory framework drastically. The notification brought out by the government in November 1997 announcing the phased dismantling of the APM from April 1998 was of special importance. The notification had the following features.

- Fixed time frame (four years) for dismantling the APM
- Linking the price for domestic crude oil to the international price
- Abolishing the retention price for refineries

- Ex-refinery price of controlled products to be fixed by the OCC
- Adjusted import parity for existing refineries
- Tariff adjusted import parity for new refineries
- Decontrolled products-refineries free to set prices
- Rationalization of customs duty on crude oil and products to provide protection to refineries
- Marketing rights for new players, subject to conditions
- Reduction of subsidies on kerosene and LPG (liquefied petroleum gas)
- Establishment of a regulatory body

The rationale for and the nature of the reforms introduced in the upstream and downstream petroleum sectors and the natural gas sector are discussed below.

Exploration and production

The widening gap between domestic production and consumption has put a serious strain on the Indian economy with the import bill rising over the years to 260 billion rupees in 1997/98. Keeping this in view, the GoI has taken several initiatives to increase the pace of exploration and secure increasing participation of the private sector. India has around 3.14 million km^2 of sedimentary area in 26 basins. Only one-third of this area has been explored so far, that too moderately. Of late, efforts have been made by the national oil companies and the DGH (Directorate General of Hydrocarbons) to open up the unexplored areas by upgrading seismic data. The DGH has been able to cover 0.4 million km^2 during the last two years through the joint venture speculative survey programme. The DGH has also covered 1.3 million km^2 of offshore areas up to a depth of 3000 m by satellite gravity surveys.

To supplement the exploration done by the two national oil companies, the government has been regularly inviting private sector offers for exploration in notified blocks. Starting in 1979, there have been nine rounds of such offers. In the 1990s, a round was being offered every six months. The government also offered a few small- and medium-sized fields for development by private parties. So far, 32 exploration blocks and 30 discovered fields have been awarded for exploration and development. A few more contracts may be signed soon. Production of crude oil from private / joint venture fields has exceeded 3 MT; around 7 million cubic metres per day of gas is also being produced. The investment attracted into this sector has exceeded 1 billion dollars.

These achievements have, however, fallen short of expectations partly because of factors beyond the control of the government such as low international price of oil. But the government was blamed for the delays associated with the process of finalization of the production-sharing contracts and subsequent delays in various approvals required by the private operators including the exploration licensees. The government has not yet concluded the crude sales agreements with the signatories of production-sharing contracts signed three to four years back.

The government has now further liberalized the terms of offer for exploration blocks by unveiling the NELP (New Exploration Licensing Policy). Recently, 48 blocks including 38 offshore blocks, of which 12 are deep-sea blocks, were offered under this policy. Apart from better terms offered to bidders, an outstanding feature of the new policy is that it offers a level playing field to the national oil companies and private operators. The ONGC and OIL will, henceforth, have to bid for blocks instead of being awarded blocks on nomination and would have to relinquish them under specified conditions applicable to all. The new terms offered by the government include the following.

- The possibility of seismic option in the first phase of the exploration period
- No minimum expenditure commitment during the exploration period
- No signature, production, or discovery bonus
- No mandatory state participation
- No carried interest by the national oil companies
  - Income tax holiday for seven years from start of commercial production
  - No customs duty on imports required for petroleum operations
  - Biddable cost recovery limit up to 100%
  - Option to amortize exploration and drilling expenditures over a period of 10 years from the first commercial production
  - Sharing of profit petroleum, based on pre-tax investment multiple achieved by the contractor and biddable
  - Royalty from on-land areas payable at the rate of 12.5% for crude oil and 10% for natural gas. For offshore areas, it is payable at 10% for both oil and natural gas. Royalty for discoveries in deep water areas beyond 400 m isobath will be chargeable at half the applicable rate for offshore areas for the first seven years of commercial production.
  - Fiscal stability provision in the contract
  - Freedom to the contractor for marketing oil and gas in the domestic market

- Provision for assignment
- Conciliation and Arbitration Act, 1996 based on UNCITRAL shall be applicable
- A petroleum tax guide compiled for the benefit of bidders

While these attractive terms would be welcome by all, the prospectiveness of the blocks on offer is not high enough to get the desired response. The speed with which the bids are now processed and the assistance extended by the DGH and the MoPNG (Ministry of Petroleum and Natural Gas) will be the crucial determinants in the future success in this effort.

The legal framework of regulation of E&P of oil and gas is provided by the Oilfields (Development and Regulation) Act, 1948 and the Petroleum and Natural Gas Rules, 1959. These provide the powers to grant licences for E&P, charging of royalty, etc. The above Act was recently amended to enable the government to introduce the NELP.

The DGH was set up by the government in 1993 with the objective of

- ensuring correct reservoir management practices
- reviewing and monitoring exploratory programmes and development plans of national oil companies and private companies
- monitoring production and optimal exploitation of gas fields.

Such functions can be effectively performed by the DGH only if it derives its authority from the law. As such, the government is reportedly considering the conversion of the DGH into a statutory authority. This needs to be expedited. The DGH has to combine regulation with promotion of private efforts in E&P. This is important as government regulation involves a large number of agencies and private investors that need a single point of reference to solve their problems. This will make the job of the DGH difficult and delicate.

efining and arketing

The downstream sector is regulated mainly by the Indian Petroleum Act and a number of control orders passed by the government under the Essential Commodities Act. The OCC, under the administrative control of the MoPNG, currently performs the function of planner, coordinator, adviser, and regulator in the downstream petroleum sector. During and after the dismantling of the APM, there will be a need for a statutory regulator to undertake these functions for both the public and private sector oil companies till the market becomes fully competitive. The government has assigned to TERI the task of drafting a legal framework for the regulation of the downstream petroleum sector after decontrol by the government. A draft prepared by TERI is now under consideration at the MoPNG.

The transition to a fully deregulated and competitive oil industry cannot be made in a day. Though a short transition period would help in mobilizing investments quickly, the sharp rise in prices will reduce the political acceptability of the reforms. The R Group recommended a transition period of six years. The government, however, opted for a four-year transition period (1998–2002).

Another issue is the sequencing of reforms. The GoI has thrown open refining while keeping substantial control over marketing. Only those who have invested 20 billion rupees in refineries or are producing at least 3 MT of crude oil annually are eligible to have marketing outlets for controlled products (motor spirit and high speed diesel). A greater deregulation in the marketing sector is essential for a fully competitive market to operate. Besides, a simultaneous opening up of the two sectors could stimulate investment in refineries.

While designing a regulatory system consistent with decontrol, the country's level of poverty, its large geographical expanse, and ecological diversity have to be considered. A reform that is seen to be pro-rich or anti-poor will not be acceptable. The economically deprived sections and people living in far-flung regions may continue to need subsidies on essential products like kerosene and diesel. If cross-subsidies are to be removed, alternatives must be found.

A removal of controls in today's regulatory environment would imply free sourcing of crude oil, independent determination of the crude slate and product pattern, removal of marketing and distribution controls, dismantling of sales plan entitlements, decontrolling of refining and marketing margins, and resellers' commissions. In such a scenario, the downstream hydrocarbon sector would be largely shaped by market forces. The role of a regulatory body would be quite limited and restricted to enabling provisions allowing the regulator to

- monitor the movement of prices and prevent the formation of cartels
- facilitate the supply of petroleum products to all areas of the country, including remote and disadvantaged areas
- ensure compliance with strategic obligations and safety, health, and environmental concerns
- provide a quasi-judicial dispute settlement mechanism
- facilitate the operationalization of government policy, as required
- intervene in times of national and international emergencies

- be fully informed about the state of the oil industry through the collection of complete data.

Apart from the above, regulation would be automatic and driven by the forces of competition. However, the various infrastructure bottlenecks in the import, transportation, refining, and marketing of products that come in the way of efficient market functioning need to be recognized. Till these bottlenecks are removed, the regulator would be managing the transition to a fully deregulated industry. The role of the regulator in the transition period and thereafter is discussed below.

Licensing of refinery capacity

Different countries have adopted different approval procedures for expansions and grass-roots projects. In Japan and Thailand, expansions do not require any approval. New capacity in Japan is subject to a licence, while in Thailand new capacity can be set up only in the joint sector. In India, refineries need a licence that is granted after the government satisfies itself that the refinery is required and viable. In the case of public sector refineries, such examination becomes detailed and time-consuming.

One option is to continue the present licensing procedure. The other option is to require only that the regulator be intimated and make the grant of a license more or less automatic. Since refineries involve large investments, the proposals are expected to be appraised by financial institutions with little need for any other authority to look into the feasibility of the project. This would have the advantage of reducing delay and discrimination in licensing. The regulator may also be charged with the responsibility of monitoring the progress of licensed projects and rendering assistance to these projects, as feasible.

Sourcing of crude imports

At present, the IOC (Indian Oil Corporation) is the sole canalizing agency for crude imports for public sector refineries. The OCC makes estimates of product demand and domestic production. The import requirements projected by the OCC have to be approved by the government before imports are made. The allocation of the imported crude to refineries is supervised by the OCC. Under the reforms initiated w.e.f. April 1998, joint sector and private sector refineries have been given the freedom to import crude for their own use.

Internationally, refiners are allowed unrestricted import of crude, subject to meeting environmental standards. This is important for refiners as their profitability depends critically on the crude price. In a market where the price changes daily and unpredictably, autonomy in purchase decisions can help reduce costs substantially. The refiners can also use hedging instruments offered by the future markets to protect themselves. There is, thus, a case for extending the freedom to import crude to the public sector refineries also. The trade-off is that the price advantage of bulk purchases, if any, would have to be given up.

Sourcing of products

As in the case of crude imports, all marketers and consumers could be allowed to import petroleum products. This is the practice internationally and would be in keeping with the progressive decanalization of product imports allowed by the GoI in the 1990s. The government has already allowed private import of many important products such as naphtha, low sulphur heavy stock, LPG, and kerosene. The import of these products, notably LPG, has attracted a sizeable investment from the private sector. The competition among importers has benefited consumers by bringing the prices down through the import of higher-sized parcels.

Strategic petroleum reserves

The government recently announced the decision to build up a strategic reserve of 45 days' imports in addition to operational stocks covering 21 days' consumption. This decision will be welcome all over the world as India, with a large and growing requirement for imports, could affect the oil price in a crisis. However, a host of issues need to be addressed if optimum benefit is to be derived from these stocks. These would include the size of the emergency reserve, the kind of storage to be used, the drawdown rate to be designed, the proportion to be held as crude or as products, and the composition of the product basket. Then, there is the most important question of financing the stockholding. For the successful involvement of the private sector in holding and utilization of stock, the government has to arm itself with the necessary legal powers. There are many arrangements and legal instruments in use in the countries that have built up strategic reserves.

Refinery production pattern and ex-refinery pricing

As the ex-refinery prices move towards import parity, the refineries choose the product mix that optimizes the value added. The refineries need full freedom to select the product mix and the present system of coordination by the OCC may have to be discontinued even for public sector refineries.

Inland movement of products

The OCC has the responsibility to move products to the consuming centres from the refineries and import points. This is accomplished through the supply plans drawn up every month. To what extent will the market be able to bring about the same result? Would it reach products to remote and poor regions as per the requirement? This is an important question and the regulatory system will have to tackle this problem successfully. Product pipelines will be important in the overall movement of products in the future. The regulatory powers in respect of pipelines must be clearly defined.

Marketing set-up Oil marketing companies need full freedom in setting up their dealership network and fixing the dealers' commissions and the selling price of the products. However, this assumes a fair degree of competition. The regulator will need powers to intervene during the transition period if prices are hiked unreasonably following a local disruption in supplies. This would need a careful definition of what is reasonable and what is not.

Safety concerns Compliance with the existing rules and regulations concerning safe storage and handling of petroleum products is now enforced by the Chief Controller of Explosives. Guidelines are laid down by the Oil Industry Safety Directorate for safety in plants, equipment, and facilities. Public sector oil companies follow these guidelines voluntarily. It is obvious that these guidelines need the backing of law if they have to be enforced on private oil companies. A single agency could be entrusted with this work to avoid coordination problems and conflicts.

Structure of the regulatory authority The following important issues must be resolved while laying down the structure of the regulatory authority.

- Should the regulatory body be a single-member or a multi-member body? There are obvious advantages and disadvantages in both options.
- How do we ensure the selection of persons of proven competence and integrity? How do we secure the independent functioning of the regulator?
- How do we ensure a clear demarcation of responsibilities between the ministry and the regulator? This is important for proper relations to develop between the two.
- What should be the conditions under which a regulator could be removed from office?
- What should be the procedures followed by the regulator? While public hearing on important issues is desirable, the regulator must terminate the proceedings within a reasonable time period.
- What should be the powers of enforcing decisions and penalizing offenders?
- What should the sources of revenue for the regulator be? Dependence on the government for funds could affect the independent functioning of the regulator.

These and other such questions have to be addressed while laying down the structure of regulation. In an industry that is so highly dependent on advanced technology, inter-industry consultations are important. In many countries such interactions are facilitated through industry federations. The fallout in terms of improved productivity has been impressive. It should be one of the tasks of the regulator to encourage the formation of such a federation.

Natural gas sector

Although commercial utilization of gas started in the 1960s, it picked up only after the development of the Western Offshore fields in the late 1970s. The Seventh and the Eighth Five-Year Plans saw a rapid rise in gas utilization up to the current level of around 24 billion cubic metres annually. In 1986, the Hazira–Bijaipur–Jagdishpur pipeline was laid to bring the Western Offshore gas to fertilizer plants in the western and northern states. Since 1987, the government has been fixing the price of gas. The government has also been deciding the allocation of gas to various competing consumers. Having decided on a decontrol of this sector, the government commissioned a study on the options for gas sector regulation after decontrol. The study was done by the National Economic Research Associates of UK. The recommendations of the study have been considered by the GoI in consultation with the industry, and it is likely that the government will bring in legislation to appoint an independent regulator for the gas industry.

The points made for the downstream petroleum sector apply equally to the natural gas sector. However, the transportation of natural gas through pipelines involves significant economies of scale and very little inter-modal competition. Owing to these natural monopoly features of gas transport, this sector calls for a set of regulations not required for petroleum products. These questions are discussed below.

Common versus contract carriage

The key features of common carriage are that while transmission is provided on an 'as required' basis, users are not committed to long-term use-of-system contracts. This means that the transmitter must construct additional capacity to cope with all anticipated demands for its services. The transmitter, therefore, has significant demand forecasting and investment obligations, but the quid pro quo is usually a right for the transmission company to recover all costs and earn a reasonable RoR (rate of return) on all authorized assets. The need to meet all user requirements almost inevitably means that forecasts overestimate demand and result in provision of surplus capacity.

The essence of contract carriage is that individual transmitters need to provide additional facilities only where users are willing to sign firm contracts for their use. In the case of existing facilities, transmitters are obligated to provide transmission services up to the extent of any spare capacity. This means that system development generally takes place in response to demand from users, and this in turn facilitates the financing of new developments.

In the case of both contract and common carriage, regulation would provide the same assurance that use-of-system services could be obtained by any party where surplus capacity existed. However, in contract carriage, the concern is about what would happen when development of new capacity is required but no developer comes forward at the appropriate time. In contrast, it is assumed that with common carriage it would be possible for the government or the regulatory body to require one of the transmission operators to provide the necessary capacity. Arrangements of this type are more difficult in India where the transmission network is relatively undeveloped and new developments may represent a significant addition to the network and impose disproportionately large additional costs.

It is clear that with a contract carriage system no transporter can be obliged to construct new facilities, but the true differences between the two systems is more related to who is responsible for ensuring that 'desirable' developments take place, and who bears the costs and commercial risks arising from such developments. In gas transmission development, a contract carriage is likely to provide a level of development which is broadly as appropriate and efficient as common carriage, with the additional benefit of not requiring the granting of monopoly franchises to compensate for the additional risks. Where the government or other agencies require socially desirable facilities to be developed, this can still be achieved under contract carriage, with the relevant agency in effect providing subsidy by taking on the role of the contracting party for all or part of the relevant capacity.

Authorization of natural gas transportation and distribution

In the UK, the US, and other countries that have opted for independent regulation for the gas industry, no gas transportation or distribution network can operate without a licence issued by the regulator. An application for a licence has to be made, specifying the pipeline route and capacity, demand assessment and justification, source of gas supply, transport agreement with specific users, economic feasibility of the pipeline, financial capability of the applicant, methods of financing of the project, etc. Usually, on receipt of the licence application, the regulator calls for a public hearing where other interested and concerned parties have the opportunity of representing their cases. Before granting the licence, the regulator has to be satisfied that the proposed project is required in the public interest and that the project has been designed appropriately after taking into account the availability and demand for gas, both present and future.

The regulator may also check if the proposed pipeline will adversely affect any existing transmission system. If the regulator thinks that the capacity of the pipeline does not take possible future demand into consideration, it has the power to require enhancement of the capacity provided that the transporter is authorized to recover his additional costs. Such an arrangement presupposes that the regulator would have more knowledge about present and future demand than may be available to the entrepreneur who is proposing to put up the pipeline. The procedure for licensing has tended to be long drawn and expensive in certain countries. In India, the government is progressively doing away with licences and permits but the appropriateness of licensing for regulating the gas sector needs to be examined. The gas transporters/distributors may be required only to intimate the regulator before starting business so that safety and environmental standards could be enforced.

Unbundling of trading and transmission

Gas and transportation of gas are different services, and in many countries demands have emerged for pricing and contracting these services separately. Historically, it has been a common practice to jointly price these two different services (that is offer a 'bundled' service), but this widespread practice has tended to disguise the drawbacks. The recent trend towards dealing separately with the two services, commonly termed 'unbundling', has many advantages both for the consumer and the development of a country's gas industry. It allows more efficient pricing of the individual services, which in turn

- helps to ensure efficient fuel choice by consumers
- facilitates more rational decisions on location of large gas consumers
- allows a more accurate valuation of new gas fields
- permits greater transparency and competition in provision of both gas and transportation.

In the longer term, it is difficult to argue that unbundling of this sort should be resisted; to do so would be to ignore an important element of the energy policy, which has now been widely recognized internationally. This is particularly important in the Indian context where the major objective is to attract additional private investment which will enable more gas to be produced or imported.

Cross-ownership

Cross-ownership between distribution and transmission or trading is an area of some controversy. In essence, there is a trade-off between encouraging the greatest potential development of the industry and possibly limiting the ability of the regulator to effectively regulate the industry. If cross-ownership is permitted, there is a potential for qualified and relevant companies to diversify in the industry. At the same time, cross-ownership does provide the possibility for vertically-integrated concerns to engage in anti-competitive practices that may be difficult for the regulator to control. Though there are some arguments for prohibiting this form of cross-ownership, these are not strong enough in the Indian context.

Fixing of transportation and distribution charges

In UK, the regulator has unlimited powers to fix the transportation tariff provided it does not discriminate against or favour any class of people. The UK regulator has been fixing a cap on such tariff after allowing a reasonable RoR to the transporters (around seven per cent on replacement value of assets). The change in the prices over time is governed by the RPI-x (retail price index-x) formula which motivates the transporter to achieve efficiency gains. The transportation tariff should be published so that consumers cannot be discriminated against.

In the US, the law lays down that transportation tariff should be 'just and reasonable'. The regulator has adopted a reasonable RoR method of regulation, allowing around 12% return on the written value of the assets. Any change in the tariff account for incremental investment or cost has to be approved by the regulator. A tariff based on a reasonable RoR is open to the objection that it does not reward efficiency and cost reduction.

In Canada too, the law lays down that the transportation tariff should be 'just and reasonable'. However, the Canadian regulator has been encouraging voluntary agreements between transporters and consumers and has sparingly used the powers to fix up the transportation tariff. The regulator has published the *Guidelines on Negotiated Settlement* to help consumers and transporters conclude voluntary agreements instead of relying on regulatory intervention. The regulatory law in Argentina requires that transportation tariffs be fixed to allow an efficient transporter to realize a reasonable RoR, which is a return similar to businesses having comparable risks. However, the law recognizes that in the absence of bad faith, prices freely negotiated between independent parties shall be deemed to be fair and reasonable.

In the Indian situation, either the US/UK type of regulation, which is highly interventionist, or a system which regulates by exception has to be selected. In the near future, India's incremental gas supply will come from small marginal fields or imports of LNG (liquefied natural gas). The gas will be costly even at the landfall point and there will be little scope for transporting the gas over long distances. Accordingly, the transmission cost is likely to be small in proportion to the total cost to the consumer. Further, any saving on transportation cost is likely to accrue to the gas producer/importer who will be free to charge net-back prices. Such circumstances would support the case for a light-handed system where the regulator has the responsibility to facilitate transportation contracts rather than control the prices and other terms in all cases.

Regulation of liquefied natural gas sector

The UK Gas Act does not have any regulation for import/export of gas. In Mexico, import/export of gas is allowed subject to information being given to the regulator. The laws in the US/ Canada/Argentina specifically provide for prior approval of the regulator for the import/export of gas. Korea and Taiwan, which import LNG, allow such imports only by public sector companies. Thus the entire sector is under government regulation. Japan, which consumes two-thirds of the LNG produced in the world, allows private imports of LNG. These are done mostly by the consumers themselves, the largest proportion of them being power-generating companies. Government approval for importing LNG is not required.

The import of gas/LNG will have implications for fuel security and also for the balance of payment position. There may be a need to accordingly devise a suitable regulation for this sector.

Open access

Mandatory open access means that the regulator should have the power to ensure that any spare capacity in a pipeline be offered on a non-discriminatory basis to anyone who wishes to make use of that spare capacity to transport gas. The regulator should also have the power to provide interconnection between existing lines and other lines, existing or new, so that spare capacity is utilized. In cases of dispute, the regulator fixes the transportation tariff to be charged.

Associated with the concept of open access is the concept of unbundling of services. In the UK, the transportation and sale of gas are separated by fully separating their accounts. In the US, no interstate gas transporter is allowed to sell gas.

Canadian law permits a gas transporter to sell gas, but the profits from the merchant sales are deemed to be a part of the transportation tariff. Mexican and Argentinian laws also require open access.

In all these cases, the transporter is required to offer spare capacity to intending users on terms and conditions that may be fixed by the regulator. Such a system continues to be strongly resisted in Europe where the variant of 'negotiated third-party access' has been tried without much success. In the Indian context also, the accounts in respect of gas transportation and merchant sales should be separated so that the consumers know how much they are paying for gas and how much for transportation. This would facilitate non-discriminatory pricing of transportation facilities and also voluntary agreements. However, provisions for mandatory third-party access may again discourage transporters and result in suboptimal pipeline capacity. Complete unbundling of services was introduced in the US and UK only after the industry reached an advanced state of maturity, and in Europe, it has not been possible to introduce the system as yet.

Pricing and allocation of natural gas

The prices of gas chargeable by the ONGC and OIL have been recently linked to the international prices of fuel oil. It is likely that the prices will be raised to a level of 100% parity with fuel oil in a period of five years. The prices of gas produced from medium fields developed through joint ventures are already at the level of 100% fuel oil parity. The developers of small fields have been given the right to market gas at negotiated prices. Exploration, production, and import of gas will be facilitated by allowing market driven prices for gas consumers and net-back prices to the producers/importers of natural gas or LNG. Under such a situation, it should no longer be necessary for the government to allocate gas to various consumers as it does at present. Gas producers/transporters should be free to decide how much gas is to be sold to which customers.

Regulation of distribution networks

Interstate pipelines and high-pressure transportation pipelines could be regulated by the central regulator appointed by the central government and low-pressure local area networks could be regulated by state regulators appointed by the state governments. At present, such local networks are there only in Vadodara, Surat, Ankleshwar, Bharuch, in Gujarat and some towns in Assam and Tripura. Two more projects in Mumbai and Delhi and one in Agra/Ferozabad are under implementation. The likelihood of substantial expansion of this sector in the near future is small. In the circumstances, it may not be feasible for state governments to set up regulators financed from the licence fees realized from gas distributors. The central regulator could look after distribution networks also till there is a substantial expansion in the distribution sector.

For the existing distribution networks, the distributors could be given exclusive rights to sell gas to the domestic, commercial, and small industrial sectors within clearly demarcated areas. For future projects, such franchises could be granted through a process of competitive bidding.

The practice in Mumbai and Gujarat has been to charge gas prices related to the prices of alternative fuels such as LPG and fuel oil. The Gas Authority of India Limited has proposed the same pricing for the Delhi project. Market pricing should preferably be for gas related to the prices of alternative fuels than for cost-of-service regulation, which would be difficult and time-consuming.

Roadmap to Deregulation of the Indian Petroleum Industry

Till the mid-1970s, the Indian petroleum industry was operating as a free market with many of the multinational oil companies like Shell, Caltex, Esso, etc, having a significant presence. Nationalization of the oil industry resulted in the private players being bought out by the government. Since then, state owned 'public sector undertakings' (PSUs) have played a dominant role in this sector. In all PSUs, the government of India holds 51 per cent or more of the paid up share capital. However, now the government is in the process of deregulating the oil industry with a view to transforming it into a vibrant and globally competitive industry. Full deregulation of the petroleum industry is expected by April 2002. The following sections would give a holistic view of the factors that have triggered the process of deregulation and the initiatives taken towards opening up the upstream and the downstream sectors. There is a need to have a regulatory framework in place to ensure a smooth transition from a controlled petroleum sector to a free and competitive sector.

Deregulation: historical background

In the early 1950s, pricing was based on a system of Valued Stock Account (VSA). Under this system, the basic selling prices of major petroleum products were determined as the sum of f.o.b. Ras Tanura price, ocean freight, insurance, ocean loss, import duty, interest and other charges as well as 10% remuneration. However, the government decided to abandon this system of pricing as it was based on assumed costs rather than actual costs. Consequently, an Oil Price Enquiry Committee was set up in 1960, under the chairmanship of Mr. K R Damle. The committee recommended that ceiling selling prices for bulk refined products should follow the import parity principle.

By the 1970s, it was felt that the refining capacity of the country was adequate to meet the needs and thus the dependence on imports of petroleum products was less. It was also felt that the West Asian product prices, which were the basis for determining the import parity prices, did not necessarily reflect the cost pattern and operations of Indian refiners. The Administered Pricing Mechanism (APM) was introduced in 1977 and was later modified by the Oil

Cost Review Committee in 1984. The Oil Co-ordination Committee was set up in 1975 to manage Oil Pool Accounts and to co-ordinate supply and other matters of oil sector.

The APM essentially constituted a cost-plus pricing regime wherein costs were reimbursed as per standards laid out with respect to throughputs, yield patterns, fuel and loss, operating cost. capital employed, etc. Companies were allowed a 12% post-tax return on their net-worth and reimbursed their borrowing costs. The APM was aimed at ensuring continuous availability of petroleum products to consumers at fairly stable prices and crude to refiners, while ensuring the socio-economic objectives of the Government. The government plans to move from Administered Pricing Mechanism (APM) to Market Determined Pricing Mechanism (MDPM) by April 2002.

Initiatives prior to deregulation

Exploration bidding rounds to attract private investment started in 1979, but the early rounds were not successful. Nine rounds were offered between the period 1979 to 1995. The details of these rounds have been presented later in the discussion on upstream sector.

Private participation in the refining sector in the form of joint ventures with public sector was announced in 1986. Subsequently, MRPL was set up in 1987.

The marketing of lubricant-based stocks was allowed in 1992. The government had allowed parallel marketing of LPG (liquefied petroleum gas) and SKO (superior kerosene oil) in 1993, under which the import of these products were decanalised and private parties were allowed to import and market them at market determined prices.

The need for deregulation

There are various factors that have contributed significantly in initiating and carrying forward the process of reforms:

- Demand for oil and gas is expected to grow at the rate of 6-7% per annum in the near future. This demand can be met either by increasing domestic production or through imports. Domestic production can be increased if substantial domestic and foreign investments are made in this sector, hence requiring an investor-friendly environment.

There have been serious unintended effects of the APM. Oil pricing has been divorced from underlying economic realities. The prices of politically sensitive products are not reflective of the economic costs of these products. Subsidies and cross-subsidies have resulted in a wide distortion of consumer prices and have led to a wasteful use of energy. The APM provided little incentive for improving productivity or efficiency as returns were guaranteed on the capital employed. Competition was stifled with marketing companies acting as mere distribution companies.

Over the decades of the 1980s and 1990s, import of petroleum products soared ten-fold from over 2.2 million tonnes in 1975 to nearly 18 million tonnes in 1995. Given the high levels of import in the Indian economy, the APM, which insulated the country from global markets, had lost its utility. Further, it was estimated that during the Ninth Plan Period, an investment of about Rs 1,24,000 crores would be required to create the necessary infrastructure to meet the demand of petroleum products in the country. It was recognised that such a scale of investment was not possible by the Government or the public sector oil companies. Participation of private capital from both domestic and international sources was considered imperative. The APM, divorced from economic realities, was not attractive to private investors.

Steps towards deregulation

In 1995, the Ministry of Petroleum and Natural Gas (MoPN&G) set up the Oil Industry Restructuring Group ('R' Group) to come up with a time bound program for reforms in the petroleum sector. The phasing of reforms as envisaged by the R Group was as follows:

- Phase I (1996-98) : rationalisation of retention margin; deregulation of natural gas pricing; decanalisation of furnace oil and bitumen; partial deregulation of the marketing sector with freedom to appoint dealers and distributors; removal of the subsidy on HSD and reduction of the subsidy on kerosene, LPG and input for fertilizers
- Phase II (1998-2000) : pricing of indigenous crude on the basis of average FOB price of imported crudes; rationalization of royalty and cess; further deregulation of the marketing sector; further reduction of subsidy on kerosene, LPG and input for fertilizers
- Phase 3 (2000-02) : decanalisation of ATF, HSD, MS

As a follow up of the 'R' group recommendations, the Government had appointed an Expert Technical Group (ETG), an inter-ministerial committee, which was required to examine various scenarios reflecting the impact of different levels of duty structures on various sectors.

The ETG recommended a time-bound program of reforms to move towards a market driven pricing mechanism for petroleum products in the country. Following the ETG's recommendations, the Government[a] decided on several initiatives as summarised below:

1. The cost plus formula for pricing of indigenous crude was withdrawn by linking the price receivable by oil producers to a phased import parity scheme.
2. Retention pricing system for refineries was abolished and refinery gate prices were linked to import parity except for controlled products, namely, Motor Spirit (MS), High Speed Diesel (HSD), SKO, LPG and Aviation Turbine Fuel (ATF). Refinery gate prices for controlled products were fixed on an adjusted import parity basis.
3. Ex-storage point prices of HSD were fixed at import parity with immediate effect, while consumer prices of other controlled products were linked to a phased import parity. Prices of other petroleum products were decontrolled.
4. Imports and exports of all petroleum products except crude, natural gas liquids (NGL), ATF, MS and HSD were decanalised. Sourcing and imports of crude by private and joint sector refineries was allowed.
5. Phased rationalisation of duties on crude and petroleum products was announced.
6. Conditional marketing rights for transportation fuels, namely MS, HSD and ATF subject to investments of Rs 2000 crores in refining or a minimum crude production of 3 million tonnes per annum were announced.
7. Establishment of a regulatory framework to oversee the functioning of and enforcing a competitive framework in the hydrocarbons sector was suggested.

In addition, the refining sector was delicensed in 1998. Further, while naphtha exports were decanalised with effect from June 1998, Furnace Oil (FO) imports were decanalised under the provisions of the Export-Import policy in

---

[a] Ministry of Petroleum & Natural Gas, Resolution dated 21st November, 1997

July 1998. Freight under-recoveries on HSD to the extent of 20% were passed on in the selling prices in January 1999.

However, it may be noted that HSD prices are not being fixed at import parity, despite the Government notification on the subject. Subsidies on HSD have, thus, inflated the deficit in the oil pool account. Administered HSD prices constitute a major distortion of the reform agenda.

In significant moves towards deregulation, the Government recently announced decontrol of ATF prices and the disinvestment in IBP with bidders being required to commit themselves to an investment of Rs. 2,000 crore in exploration and marketing, refining, pipelines or terminals. This is a departure from the existing norm as per which marketing rights for transport fuels can be given to only those private sector companies which own and operate refineries with an investment of at least Rs 2,000 crore or to oil exploration and production companies producing at least 3 million tonnes of crude annually.

But progress towards rationalization of duties on crude and petroleum products has not been in line with the milestones for deregulation. Duty on crude oil and transportation fuels was revised in September 2000 in the wake of spiralling international prices. With stabilization of international crude oil prices, the duty on crude was brought down from 15% to 10% while that on transportation fuels from 25% to 20%.

In his speech presenting Budget 2001/02, though the Finance Minister indicated that total price decontrol of petroleum products would be completed by April 2002. In this budget some petroleum products were taxed more heavily. There was a roll-back of reduction in excise duty on HSD from 16% to 12% and exemption of Special Excise Duty of 16% on MS proposed in September. Also a 5% duty was introduced for SKO sales under the pubic distribution scheme. The net result is that the current duty structure remains at variance with the approved structure. The variance between actual and approved duties is presented in Table 1.

Table 1. Gaps in rationalization of duties to Government approved levels: 2001/02

Product	*Approved by Government*	*Actual*
Customs duty		
Crude	0-5	10
HSD	15	20*
MS	15	20
ATF	15	20
LPG	10	10
LNG	0	5
FO/LSHS	10	25
Naphtha/NGL	5	5
Kerosene	0	5
Kerosene (PMS)		35
Others	15	25
Excise duty		
HSD	15	16*
MS	165	16+16
LPG	10	8
Kerosene	10	8

* Additional excise of Re 1/litre of HSD

Issues in the upstream sector

India has total recoverable reserves of 658 million tonnes of crude oil and 628 billion cubic metres of natural gas. India has a very large sedimentary area of about 3.14 million square km comprising 26 sedimentary basins. Out of these, only six basins have been explored for oil and gas. Approximately 70% of the sedimentary area lies unexplored. Only 16% is well explored and the rest is poorly explored. Till recently, exploration activity was largely in the hands of the two National Oil Companies - Oil and Natural Gas Corporation Ltd. (ONGC) and Oil India Limited (Oil). ONGC and OIL have a share of about 88% of the country's present oil and gas production. Private/JV consortia account for only 12% of oil and gas production.

Exploration bidding rounds to attract private investment started in 1979, but the early rounds were not successful. The first four rounds were spaced over a period of twelve years (1979-91). The next five rounds came in two years (1994-95) and succeeded in generating some interest in the international oil industry. To increase this interest, the government decided to award some small and medium sized fields for development in the private and joint sectors respectively. An innovation was also introduced in the ninth round - known as the JV (joint venture) round – to reduce the risk for the private investors by associating ONGC/OIL as partners in these exploration ventures. The total investment by the private sector in these is estimated to be in excess of $ 2 billion.

The details of blocks advertised before the launch of the New Exploration Licensing Policy (NELP) and the bids received in the various rounds are presented in Table 2 below.

Table 2 Exploration blocks offered and bids received

Round	Year	Blocks offered	Bids received
I	1979	32	4
II	1982	50	nil
III	1986	27	13
IV	1991	72	24
V	1993	45	15
VI	1994	46	20
VII	1994	45	12
VIII	1994	34	38
JV	1995	34	22

New Exploration Licensing Policy

The Government of India has stepped up its initiative of enticing private investment into the oil sector. The most significant milestone in this regard has been the notification of the New Exploration Licensing Policy (NELP) announced in 1997-98, with two main objectives:

- Attracting private sector and foreign investment in exploration and production.
- To gather as much data as possible and map the sedimentary area accurately.

With it, the Government hopes to eliminate the country's burgeoning demand-supply differential and the resultant expensive reliance on import of crude and petroproducts. This series of new, attractive fiscal and contractual terms are designed to attract international operators to the Indian oil sector. Oil companies from the private and the public sector will be treated at par and all new acreage acquired will be given market-driven price of crude oil and natural gas produced. This will hopefully enable the Government to award acreage to the company with the best work programme and fiscal terms. The salient features of NELP are as follows:

- National Oil Companies to compete for acreage.
- No payment of signature, discovery or production bonus.
- No minimum expenditure commitment during the exploration period.
- No mandatory state participation/carried interest by NOCs.
- Freedom to sell crude oil and natural gas in domestic market at market related prices.
- No cess on crude oil production.
- Royalty payment for crude oil on ad valorem basis
  - 12.5% for onland areas
  - 10% for offshore areas
- Royalty on deep water areas (beyond 400m bathymetry)
  - 5% for first seven years after commencement of commercial production
- Infrastructure status: 7 year tax holiday from commencement of production

NELP - I

In the first round of NELP in January 1999, the Government of India invited bids for 48 exploration blocks, comprising 26 offshore blocks, 10 onland blocks and 12 deep offshore blocks. Of the 48 blocks offered, the Ministry of Petroleum and Natural Gas approved the award of 25 blocks to domestic and foreign companies in January 2000. The government signed the Production Sharing Contracts (PSCs) for 25 oil blocks in April 2000. Of these 25 blocks, 3 blocks were awarded earlier. The participation in NELP I bidding process indicates that Indian and foreign private companies as well as the NOCs have responded positively. Details of the blocks awarded and PSCs signed are presented in Table 3. Total area covered in these 25 blocks is 231,870 square km. Out of the 15 bids ONGC had submitted, it bagged the contracts for 8 blocks.

Table 3. Blocks awarded and PSCs signed under NELP-I

Sl No.	Basin	Area (sq.km.)	PSC signed with
Onland Blocks			
1	Arunachal Pradesh*	300	Geoenpro-Geopetrol-Enpro India
2	Ganga Valley	36750	ONGC-IOC
Deep Water Blocks			
3	Krishna Godawari (Offshore)	10810	RIL-NIKO
4	Krishna Godawari (Offshore)	9800	Cairn
5	Krishna Godawari (Offshore)	7645	RIL-NIKO
6	Krishna Godawari (Offshore)	9940	ONGC
7	Krishna Godawari (Offshore)	8980	ONGC
8	Mahanadi	9605	RIL-NIKO
9	Mahanadi	10005	ONGC
Shallow Water Blocks			
10	Cauvery	4940	Mosbacher-Energy Equity-HOEC
11	Cauvery	5215	OIL
12	Gujarat - Kutch	1465	RIL-NIKO
13	Krishna Godawari	4485	ONGC
14	Krishna Godawari	4790	RIL-NIKO
15	Krishna Godawari	2460	RIL-NIKO
16	Krishna Godawari	4020	RIL-NIKO
17	Kerala - Konkan	19450	RIL-NIKO
18	Kerala - Konkan	15910	ONGC
19	Mumbai	5270	RIL-NIKO
20	Mumbai	5740	RIL-NIKO
21	Mumbai	18870	ONGC-IOC
22	Mahanadi	5420	ONGC-GAIL
23	North East Coast (Offshore)	14535	RIL-NIKO
24	North East Coast (Offshore)	10425	OAO-Gazprom-GAIL
25	Saurashtra	5040	RIL-NIKO

** PSC could not be concluded*

NELP - II

The government has offered 25 exploration blocks under NELP-II in December 2000. These include 9 onland blocks, 8 offshore blocks and 8 deepwater blocks. Of the 25 blocks offered, 23 blocks have been awarded by the Government and Production Sharing Contracts would be signed. Table 4 presents the details of blocks awarded and the successful bidders in NELP II. Total area covered in these 23 blocks is 268,344 square km.

Table 4. Blocks awarded under NELP-II

Sl No.	Basin	Area (sq.km.)	Successful bidder
Onland Blocks			
1	Upper Assam	6215	RIL-HEPI
2	Cambay	1424	GSPC.Ltd..GAIL-JTI
3	Cambay	419	Niko Resources Ltd.
4	Ganga Valley	23500	ONGC-IOC
5	Mahanadi	7900	OIL-ONGC-IOC-GAIL
6	Rajasthan	2535	OIL
7	Bengal	12505	ONGC-IOC
Shallow Water Blocks			
8	Cauvery	5920	ONGC
9	Cauvery	3530	ONGC
10	Gujarat - Saurashtra	8841	RIL-HEPI
11	Kerala - Konkan	16125	ONGC
12	Mumbai	18414	ONGC-IOC-GSPC
13	Mahanadi	6730	ONGC
14	Mahanadi	8330	ONGC-IOC-GAIL-OIL
15	Bengal	6700	ONGC-IOC
Deep Water Blocks			
16	Gujarat - Saurashtra	13937	ONGC
17	Gujarat - Saurashtra	14825	ONGC-GAIL
18	Kerala - Konkan	18113	RIL-HEPI
19	Kerala - Konkan	20998	ONGC-GAIL
20	Kerala - Konkan	14889	RIL-HEPI
21	Kerala - Konkan	26149	ONGC
22	Mumbai	11239	ONGC-IOC
23	Mumbai	19106	ONGC-IOC-GAIL-OIL-GSPC

The government is planning to invite bids under NELP III by the end of this year. The primary objective of NELP was to attract foreign investment in exploration and production. However, the responses to NELP I and II indicate that most of the foreign majors, including Exxon-Mobil, Total Fina and Shell, have stayed out of the bidding process under both rounds.

Policy for encouraging LNG imports

The burgeoning gap between demand and supply of natural gas has impelled the Government to promote the import of natural gas. Gas demand projections as given by Hydrocarbon Vision 2025 are presented in Table 5. In 1996, Petronet LNG was formed by the Government to facilitate imports of LNG. This company is promoted by four public sector hydrocarbon majors – IOC, BPCL, ONGC and GAIL. The LNG projects have been proposed by companies like Shell at Hazira, CMC Energy/Unocal/Grasim at Ennore, IOC/Petronas at Kakinada, Tata/Totalfina/GAIL at Mumbai and British Gas at Pipavav.

Table 5. Gas demand projections (MMSCMD)

Year	Demand
1999-2000	110
2001-2002	151
2006-2007	231
2011-2012	313
2025-2026	391

The government is considering the formulation of a comprehensive policy on LNG import. The policy has been pending since last one year. It is likely to be finalised shortly with the Centre moving a cabinet note for the approval on specific issues of LNG policy, nature and scope of regulation in the sector, location and size of LNG terminals, role of Indian shipping companies in LNG transportation and rationalisation of taxes and duties. Till the time a proper regulatory mechanism is in place, an inter-ministerial committee of secretaries would regulate the LNG sector. Gas prices would best be left to the market forces.

LNG shipping policy

India is expected to become a major importer of LNG in the coming few years. LNG terminals are being established in locations like Dahej, Kochi, Dabhol, Ennore and Pipavav. The LNG shipping policy of the government requires a minimum 26% shareholding by an Indian company in any venture carrying LNG to India and this has to be maintained throughout the period of the contract. At present, the policy allows only fob imports of LNG. This would, however, be reviewed after seven years. The policy requires that there should be a transfer of technology to the Indian shipping partner so that within five years from the registration of the vessel, it would be managed, maintained and operated by Indian crew and personnel. Further, it encourages the registration of the LNG vessel under the Indian flag. Till date, only the flagship carrier Shipping Corporation of India has ventured into LNG shipping. Finally, the government is looking at enabling a zero level of taxation for a specified number of years for Indian shipping companies in the LNG business.

Competitiveness of LNG in power generation

The viability of LNG as a fuel for power generation needs to be explored. The analysis of viability of LNG is specific to timing and location. LNG prices are linked to crude prices. Hence, fluctuations in crude prices would have a bearing on LNG prices, which would then determine the cost of power generated. In addition, gas in India has to compete not only with coal but there will be substantial gas-on-gas competition. LNG has to compete with other imported gas (piped gas), as well as domestic gas.

Industry level impacts of deregulation: the downstream sector

The Indian petroleum industry is expected to be fully deregulated in April 2002 and with this the operating environment in the industry is likely to witness sweeping changes. Some of these are described below.

Industry structure: more players, intense competition

Already some of the petroleum product segments of the downstream sector are freed from governmental controls. With the government opening up the petroleum industry, the marketing of transportation fuels would also witness private sector participation.

When the Indian lubricants market was decontrolled in 1993 to parallel marketing, there were 20 new entrants who captured about 12% of the market in just five years, eating into the market shares of established players like IOC and BPCL. The market also saw a spate of joint ventures such as the Indo Mobil between Mobil and IOC to blend, package, distribute and market Mobil brand lubricants throughout the country.

Similar restructuring of the industry may be expected with the decontrol of transportation fuels – while the increase in number of new players may not be as high as in the case of lubes, primarily on account of the conditional marketing rights, the degree of competition in this sector would be more severe.

Sourcing of crude oil

Till recently, all PSU refineries had to source crude through IOC, which was the sole canalising agent. Only joint sector and private refineries had freedom in crude sourcing and imports. On March 14 this year, the Government extended this freedom to all PSU refineries. The move was welcomed by the industry as imports could now be tailored to suit the exact requirements of a particular refinery. All companies would now need to be prepared to chalk out their optimal crude sourcing patterns, taking into consideration prices (f.o.b price as well as freight component) as well as yield patterns for various domestic and imported crudes.

Domestic crude pricing and sourcing

Post deregulation, domestic oil producers are likely to price their crude at full import parity prices. In addition, the existing system of allocation of domestic crude is likely to be discontinued. Refiners would have to get into commercial agreements with domestic producers like ONGC and OIL to source domestic crude for their refineries. Reportedly, several PSUs and even private players like Reliance Petroleum Ltd are considering long-term commercial agreements for crude supplies from ONGC.

Refining - capacity utilisation and yield patterns

Under the current system, production of public sector refineries is co-ordinated by the OCC keeping in mind regional product demand patterns. Post deregulation, refineries would be free to determine their yield patterns and capacity utilisation levels in accordance with the demand and realisations for petroleum products.

Product pricing

The Government currently administers ex-storage point prices for controlled products. Post deregulation, all controls on pricing of products would be lifted. However, reduced subsidies on SKO and LPG would continue and these would get transferred to the fiscal budget.

In such a scenario, pricing may be expected to be set on the import parity principle. However, several factors are likely to impede the setting of prices at import parity levels - specifically, the existence of surplus in certain products; the impact of competitive forces; problems relating to access to and tariff-setting for pipelines and other infrastructure. Details on likely pricing scenarios in the post-deregulation era are given in a following section.

Product distribution

Under the present system, distribution of controlled products is co-ordinated by the OCC. Its monthly Supply Plan for controlled products includes specifications on product movements and mode, deliveries and receipts at terminals and depots and pipeline throughputs. Post deregulation, product distribution would have to be organised separately by each marketing company.

In such a scenario, access to marketing infrastructure becomes critical. Transportation costs comprise a significant portion of consumer prices of petroleum products. Product movement by pipelines offers the least cost option for transportation and requires much less energy as compared to other modes of transportation.

The issue of open access to pipelines has been discussed by several groups/forums in the industry – the Expert Technical Group, the Group on India Hydrocarbon Vision 2025, etc. It has been opined that pipelines are natural monopolies and should be declared as "common carriers" by the Government and the use of facilities for existing pipelines could perhaps be determined through negotiations amongst concerned parties and facilitated by the proposed regulator for the sector. There is no concensus, however, on access to and tarriffs for storage and marketing. factilities.Tariffs for pipeline access have been laid out by the ETG for 1999/00 (Table 6) with the suggestion that these be escalated annually by 80% of the annual inflation in the wholesale price index. However, this proposal is still under consideration by the government.

Table 6. ETG-recommended product pipeline tariffs for 1999/00 (Rs/MT/Km)

Product pipelines	Up to 300 kms	Beyond 300 kms
Existing pipelines	0.81	0.77
New pipelines commissioned after 1 April 1998	1.20	1.13

Market shares and marketing efforts

Under the present system companies engage in product exchange and each refinery caters to full industry[1] volumes. In addition, products are often cross-hauled, with expenses being reimbursed from the oil pool.

Post deregulation, with each refinery seeking to minimize its costs (including distribution costs), refineries are likely to concentrate their marketing efforts in the most lucrative depots – i.e. depots where positioning costs are the lowest and competition is likely to position products at heavy discounts. It is extremely difficult to predict likely market shares in a situation that would be characterised by uncertainties with companies vying with each other for enhanced shares.

---

[1] Total requirements of IOC, HPC, BPC and IBP

Retail operations

Under the present system, the location and size of facilities at large volume consumers is subject to Government approvals. In addition, product dealers and retailers are selected through appointed bodies. In a deregulated environment, it is expected that PSU marketeers would have the freedom to decide on their retail networks.

The threat of competitive takeovers of retail outlets in a deregulated scenario is imminent . Recent trends indicate attempts at consolidation of retail networks, by increasing the proportion of company-owned retail outlets. For instance, IOC has steadily increased the share of company-owned & company-operated retail outlets to 34% of its over 7500 sales points and has announced plans for increasing this share to 50% in the next two years. The race for stakes in the public sector oil marketing company IBP is also indicative of the realisation that a stronger retail network could provide the cutting edge in a fiercely competitive environment.

Internationally, chains of convenience stores add to retail margins of transportation fuels. In the USA, it is estimated that about 60% of gasoline sales are through convenience stores. Indian companies are also investing large sums in upgrading their strategic outlets to add value-added services like restaurants, automatic teller machines, shopping convenios and cyber cafes. BPC is said to be targetting 10% non-fuel revenues in the next three years.

Regulatory Framework

One of the key issues in a deregulated environment would be that of ensuring a level playing field for all players. At the same time, consumer interests with regard to availability of products at competitive prices also need to be safeguarded. In general, competitive forces are considered to be self-regulating. Regulatory intervention, though essential for some issues, would thus be restricted to selected areas. Details on the regulatory framework are discussed in a subsequent section.

Pricing scenarios for petroleum products

As mentioned earlier, it may be expected that prices in the domestic markets would be based on the import parity pricing principle. These prices would, however, be impacted by competitive forces with the most efficient player (equipped with lower costs that could translate into discounting capability) setting the price in each market. For some products, like MS, where surplus volumes may exist, these surpluses may be valued at export parity prices. Of course, exports would be subject to demand in international markets, particularly the Asia Pacific region.

Import parity prices

In the deregulated scenario, the present system of administered uniform ex-storage point prices for controlled products is likely to get replaced by one in which companies would offer products at different rates in different markets depending upon the extent of competition prevailing in that market. In general, market prices would reflect import parity prices, i.e., landed cost of a product at the nearest port, the least-cost freight from the port to the market and a reasonable margin to cover selling/distribution expenses and profits.

International prices

International prices significantly influence pricing in the import parity regime. International prices are highly volatile. Table 7 indicates that variations in prices across the year 2000/01 were upto $80/MT. In the absence of pool accounts, such fluctuations would impact on domestic prices. Spreads between crude and product prices change rapidly, affecting refining margins.

Table 7. International product prices: Fob Middle East Gulf ($/MT)

Product	*Quarter Averages: 2000-01*				*Annual Average*
	Q1: Apr - Jun	*Q2: Jul - Sep*	*Q3: Oct - Dec*	*Q4: Jan - Mar*	*2000-01*
SKO	224	288	289	207	252
HSD	203	260	241	180	221
MS	258	303	257	235	263
ATF	224	289	289	208	253
FO	147	143	140	109	135
Naphtha	232	262	244	213	238
LPG	276	296	335	324	308

Importer's margin

An assessment of importer's margin is important because the other elements in import parity prices reflect actual costs. TERI estimates indicate that importers margins (to cover marketing costs and ensure reasonable profits) may be set at around $3/bl for the purpose of estimation of import parity prices. This estimate is based on several sources: surveys among key players importing decontrolled products in India as well as secondary data on companies in Thailand[2] and USA[3].

Import parity price setting for HSD at Ambala depot in Haryana is presented in Annexure 1. It illustrates how this principle may be applied. The port nearest to Ambala is Kandla, Gujarat. Annexure 1 shows the import parity price build up for HSD at Kandla port and then worked forward to Ambala.

Impact of competitive forces on prices

While it may generally be expected that with deregulation, prices of petroleum products would move towards international prices, some factors, competitive forces in particular, may impede the setting of prices at import parity. Given that there is little indication of brand preference in most petroleum products, competition is likely to be manifested in price wars. Thus price-setting would be crucial in capturing and retaining customers. The price that would prevail in any market is likely to be the lowest offered by any player, with all other players following suit to avoid losing out on market share.

In the identification of the most efficient player, an assessment of relative advantages of competitors is imperative. These advantages may flow either from differences in cost structures or from other policy parameters such as fiscal incentives. Such advantages would translate into discounting capabilities in the marketplace. These discounting capabilities would, however, differ vis a vis each refinery and would be depot specific.

The single most important point of comparison would be crude costs, which constitute over 90-95% of refining costs. Fiscal incentives could be another advantage. A review of the audited financial results of RPL indicates that deferred sales tax liability for 2000/01 works out to be Rs 960.52 crores. Netting out Rs 100.44 crores set aside by the company for defeasing this liability, benefit accruing to RPL is estimated at Rs 860.08 crores, which translates to a sizeable average benefit of about $ 1.02/bl for the year 2000/01.

In summary, each refinery would, therefore, compare itself with the most efficient player and then estimate this competitor's advantage using its relative refining efficiency (reflected in direct variable refining costs, primarily crude costs) net of its positioning costs (i.e. the competitor's cost of positioning products in markets located within its economic zone) plus any other advantage that the competitor may have out of policy incentives extended.

---

[2] National Energy Policy Office, Thailand

[3] Source: Energy Information Administration, Financial Reporting System - based on data for select US companies

Other impacts of competitive forces: cuts in market shares

In addition to price wars, competitors may also engage in aggressive marketing to capture market shares. This is particularly true of direct trade where marketing investments required may be lower than that for retail operations. In this regard, refineries would particularly have to be wary of importers capturing coastal customers or of consumers directly importing their requirements. As a result refineries servicing coastal markets are particularly threatened in respect of their direct sales. Such aggression may also be visible in the retail segment with competitors trying to buy out retail outlets.

Strategies likely to adopted to combat competition in free markets

Dealing with surplus products

An analysis of the likely demand-supply situation in 2002/03 indicates that petroleum products, such as MS, are likely to be in surplus. In attempting to analyse how companies are likely to react in such a situation, the possibility of exports has been explored. Exports to East Asia – the most likely destination – are, however, likely to be difficult on account of a supply overhang in the region (Figure 1).

In such a situation, throughput cuts are inevitable. Here, it may be worthwhile to mention that refining capacity utilisation in the Asia-Pacific region has hovered between 82% - 88% over the last decade, while APM influenced over-utilisation of refining capacity in India. Post-deregulation, with product offtake from refineries not guaranteed, companies would have to decide on throughput levels that maximise margins for them. With reduction in throughputs, there would be unmet demand for some products in certain markets which would have to be met through imports.

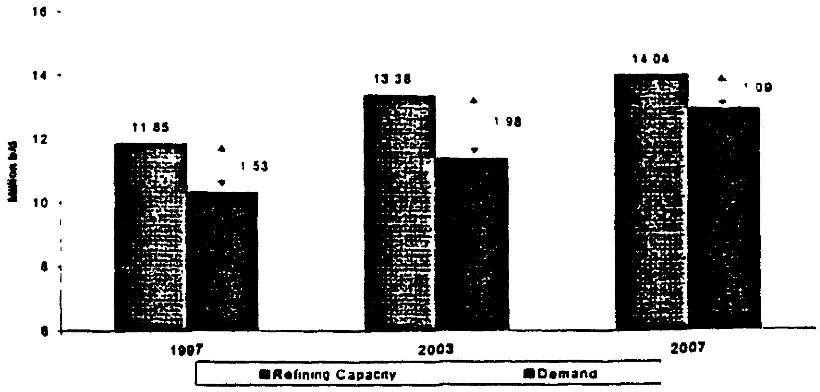


Figure 1 Oil refining capacity and demand in East Asia

Marketing strategies : product exchange or regional focus

As mentioned earlier, in their drive to reduce distribution costs, refineries would minimise movements of products outside their "economic" evacuation zones. As a result, two kinds of strategies are likely to emerge – either companies would enter into product exchange agreements with competitors or would aggressively capture markets to emerge as strong regional players. The former is more likely given that it entails lower costs than in aggressive marketing and would therefore maximise margins for the industry as a whole.

Optimising raw material costs

As indicated earlier, crude procurement would constitute a key element in determining relative cost advantage among various players.. Most Indian refineries are found to use a mix of Middle Eastern, West African and domestic crudes. In the post-deregulation scenario refineries would have to explore the techno-economic feasibility of using a variety of crudes. Industry reports indicate that large discounts are available on several crudes such as the Venezuelan Mesa and the Mexican Maya crudes

Organisation flexibility and dynamism

In the deregulated scenario, companies are expected to fiercely compete with each other in the marketplace. Clearly cost cutting, concerted marketing efforts and quick decision-making could provide the cutting edge. The market is likely to be very dynamic and a great deal of volatility is imminent, at least in the short term. Over the longer term, industry players would find it beneficial to increase administrative flexibility and dynamism to cope with the uncertainty and unpredictability that are characteristic of free markets.

Regulatory Framework

Need for a regulatory authority

The process of deregulation aims at fostering a competitive environment in an industry, thereby assuring consumers the availability of quality products at competitive prices. Government decisions so far – private participation in upstream, parallel marketing, delicensing of refineries, decanalisation of crude and petroleum products, price decontrol, etc.– all target nurturing competition in the oil industry. However, there remain areas where competition is likely to be ineffective, especially in areas where there have been virtual state monopolies in the past. The efficacy of market forces alone in such situations is questionable.

In such a scenario, there emerges a need of simulating the effects of competition through a combination of controls and standards. Such initiatives come under the purview of a regulatory authority. For the Indian hydrocarbons sector, two key issues emerge,

Assure a level playing field for all players
Protect consumer interests with respect to availability of petroleum products at fair prices

Level playing field
Marketing of transportation fuels at present is reserved for public sector oil companies only. Post deregulation, subject to eligibility criteria, private concerns would be allowed to venture into retailing of transportation fuels. However, new entrants are likely to face stiff competition from PSUs given their established distribution infrastructure – pipelines, storage depots, hydrants, etc.

Private players argue that the rationale for deregulation has been promotion of competition in markets to enhance quality and service levels. While instituting a high level of competition would require substantial time, the process can be expedited by providing open access to markets and consumers. Accordingly, they have expressed the need for access to existing distribution infrastructure such as pipelines, storage installations, depots, hydrant systems at airfield installations, etc. If access be denied to them, duplication of such facilities would only lead to an increase in product prices at the consumer end.

In contrast, the public sector companies argue that, post deregulation, the downstream petroleum sector is akin to any other business activity. A new entrant in any business, is at a disadvantage to an established player with his facilities in place. New entrants capture markets on the basis of their competitive advantage - be it service, technology, quality or marketing skills. As in any other business, an existing player may or may not consider to lease/hire out the use of its facilities to other market players.

The above mentioned clearly brings out the wide difference in views on the subject. Post deregulation, thus, there emerges a need for an expert body (regulator) to mull over such issues and take appropriate steps to assure a level playing field for all stakeholders.

Consumer interests

In a deregulated environment, both logistics and pricing, would be outside the purview of Government control. Oil companies would decide themselves, where they wish to market their products and what prices. In such a scenario, there are possibilities that companies may suspend operations in markets which are not lucrative enough, especially the far flung areas. There, thus, emerges a need, to institute a mechanism to assure access to and availability of petroleum products.

At the same time, in the absence of administered pricing, possibilities of collusive pricing by marketeers also emerge. Given the widespread usage of petroleum products, rational petroleum prices are crucial for an economy. Sharp or undue increases can easily lead to inflationary pressures. Further, given that energy constitutes the basic input for any industrial activity, prices of petroleum products affect competitiveness of the whole manufacturing/industrial sector.

International experience in regulatory systems

The hydrocarbons industry can be broadly classified into two categories – upstream activities related to exploration and production of crude and natural gas; and downstream activities encompassing refining and marketing of petroleum products and gas. A review of regulatory experiences in these two categories is summarised below:

Upstream

The world over, Governments tend to retain control over exploration and development of mineral resources. Governments, being owners of these resources, are charged with the responsibility of ensuring optimal utilisation of a nation's mineral wealth. A survey of upstream regulation in US, UK and Norway revealed that upstream regulation entails,

a) Promoting exploration of oil and gas resources
b) Supervision to ensure that licensees manage resources in an efficient and prudent manner
c) Ensuring environmental protection and impact mitigation of upstream activities

These responsibilities fall under the purview of the Department of Interior in the US, the Department of Trade & Industry in the UK and the Ministry of Petroleum & Energy in the Norway. Government control in upstream regulation, is clearly evident from the above mentioned.

In fact, a similar situation is also witnessed in developing economies,

- Argentina : Energy Secretariat under the **Ministry of Economy**
- Mexico: Absolute monopoly of Pemex under the **Ministry of Energy**
- Thailand: Department of Mineral Resources under the **Ministry of Industry**
- Venezuela: Director General Hydrocarbons under the **Ministry of Mines & Energy**

The above examples clearly illustrate that Governments, being rightfully concerned about exploitation of a nation's mineral resources, tend to retain control over regulatory issues in the upstream sector.

Downstream

A review of regulatory systems elsewhere in the world indicates the following role for a regulatory authority in the downstream sector,

- Fostering competitive markets
- Assuring access to quality products/services at reasonable prices
- Consideration of environmental impacts of energy projects

One of the most important functions of regulatory agencies, be it the Federal Energy Regulatory Commission (FERC) in the USA or the National Energy Board (NEB) in Canada, is that related to regulating transmission of oil and gas via pipelines and setting tolls & tariffs for fair access to pipeline systems. Agencies world over recognise that pipelines are natural monopolies. Ensuring competitive markets, thus, requires measures and systems that do not offer any single player undue competitive advantage on account of access to/ownership of pipeline networks.

Typically such agencies are independent authorities, created through enabling legislation, which confers powers from existing legislation to the new authority. The FERC, for instance, was created through the Department of Energy Organisation Act and it draws powers from Acts like the Federal Powers Act, Natural Gas Act, Natural Gas Policy Act, etc. Likewise the Gas and Electricity Markets Authority in the UK draws on powers from The Gas Act, The Electricity Act, and The Competition Commission.

One key aspect which stands out in downstream regulatory systems is that a ***single agency*** regulates on matters related to ***both oil and gas***. In fact, both FERC and the NEB regulate electricity transmission as well in addition to transmission of oil and gas via pipelines.

Regulatory Framework for the Indian Hydrocarbons Sector

Upstream

In light of the above mentioned international experience in upstream regulation, it appears that there is no adequate justification for a separate regulatory authority for the upstream sector. The regulation of oilfields and the development of mineral oil resources of the country presently is as per the Oilfields (Regulation and Development) Act, 1948. In addition the Government is assisted by the Directorate General Hydrocarbons (DGH).

Downstream

Again, in line with international experience and on account of the commonality of regulatory functions in downstream oil and gas, viz., tariff setting for common carrier pipelines, assurance of level playing field, assuring availability of gas/petroleum products at competitive prices, etc., ***a single authority is preferable.***

As is the case in other countries, the new regulatory authority should be created through appropriate legislation. Creation of this authority by an Act of

Parliament would also ensure independence of the regulator's office. The regulatory body should be independent of the Government on account of the fact, that the Government would also be a regulated entity due to its stake in public sector oil companies. Independence is also imperative to assure confidence to private and foreign investors.

Need for an interim authority

While it is imperative that the regulatory authority should be created through appropriate legislation, prior legislative experience indicates that enactment of new legislation can take considerable time. Meanwhile full deregulation of the hydrocarbons sector is expected by the April 2002. The regulatory body should be instituted well before full deregulation of the sector. Given the limited time frame, the possibility of positioning a regulator under the existing Acts/Rules should be explored. This approach offers the added advantage of providing the Government actual regulatory experience in the hydrocarbons sector to frame appropriate legislation.

It may be noted that a similar approach was adopted while setting up the Securities and Exchange Board of India (SEBI) and the Insurance Regulatory and Development Authority (IRDA). SEBI was constituted by the Government as a non-statutory body in 1988 to promote the developments of the security markets and to provide adequate investor protection. SEBI was given statutory recognition by an ordinance promulgated in March 1992. The ordinance was then replaced by The Securities and Exchange Board of India Act, 1992 after obtaining adequate experience in regulation of financial markets.

Likewise, the Government instituted an Interim Insurance Regulatory Authority in January, 1996 through a Government Resolution. The interim body was set up, under the Ministry of Finance, to evolve a format for effective control over the insurance industry, deal with all matters relating to promotion and orderly growth of the insurance market, propose comprehensive legislation for an autonomous IRA conceptually similar to the SEBI and carry out such other non-statutory functions as may be delegated by the Government. IRDA in its present form was finally set up after three years through the Insurance Regulatory and Development Act, 1999.

Thus, drawing from prior experience and given the widespread implications of developments in the hydrocarbons sector, it is suggested that an interim regulatory authority be constituted to address imminent regulatory issues in a deregulated environment. The interim authority could subsequently undertake the task of drafting comprehensive legislation for providing statutory support to the same.

Functions of the proposed authority

Key functions of the proposed regulatory authority may be as below:

1. To ensure a level playing field for all operators: The regulator would have to balance consumer interests with those of investors and at the same time ensure a level playing field for all investors.
2. To regulate tariffs for pipelines used as common carrier: Since pipelines are natural monopolies in areas that they serve, in order to ensure a level playing field, the regulator would have to assess tariffs for use of common carrier pipelines and associated facilities.
3. To ensure transparency in tariff setting: Tariff setting is critical for a firm's profitability and consumer prices at the retail end. The regulator will have to develop publicly known mechanisms for tariff setting.
4. To analyse trends in market prices to prevent cartelisation: One of the key functions of the regulator would be to protect consumer interests. In order to do so, the regulator would have to keep a track of changes in market prices and prevent the formation of cartels.
5. To monitor global developments of the hydrocarbons sector: In order to perform its various roles, the regulator's office would have to be a repository of information on the hydrocarbons sector pertaining to sales, production, availability, import/exports, demand estimates, etc.
6. To implement Government policies: Policy development would continue to rest with the Government. The regulator would have to implement prevailing policies for the hydrocarbons sector.
7. To secure involvement of voluntary agencies and user associations to implement consumer protection measures: The role essentially entails promotional efforts at increasing consumer awareness with regards to product quality.
8. To ensure supply of products to far-flung areas: The regulator would have to devise an appropriate scheme to administer freight subsidy to far-flung areas.
9. To intervene in crisis situations/natural calamities/wars: While most organisation would have their own contingency measures to deal with crisis situations, the regulator can provide overall direction and guidance.

10. To assist in planning and development of the hydrocarbons sector: The regulator would have the added responsibility of promoting the healthy growth of the hydrocarbons sector.

Annexure 1. Indicative Import Parity Price of HSD: Ambala

Element	*Unit*	*Value*
Fob	$/MT	221
Fob[1]	Rs/MT	10165
Load Port Charges @ 1$/MT	Rs/MT	46
Freight (25-45 TMT)	Rs/MT	387
Cost & freight	Rs/MT	10598
Insurance @0.3%	Rs/MT	32
Ocean Loss @ 0.3%	Rs/MT	32
Cif	Rs/MT	10661
LC Charges @ 0.3% of Cif	Rs/MT	32
Landing charges	Rs/MT	55
Customs duty @ 15%	Rs/MT	1607
CVD @ 15%	Rs/MT	1849
Cost including Duty	Rs/MT	14204
Terminalling charges	Rs/MT	182
Landed Cost	Rs/MT	14386
Financing charges	Rs/MT	106
Marketing margin [2]	Rs/MT	1050
Import Parity Price: Kandla	Rs/MT	15542
Least cost movement from Kandla to Ambala	Rs/MT	1125
Import Parity Price: Ambala[3]	Rs/MT	16667

---

1. Average Fob MidEast Gulf prices over the period Apr'2000 – Mar'2001
2. Based on surveys in India and secondary data on companies in USA and Thailand (details above)
3. There are three possible modes of movement: the Kandla-Bhatinda Pipeline (KBPL), rail movement or by road through tanker trucks. Movement by KBPL would have lowest costs at Rs 1,125/MT

Indian Oil
Corporation Ltd,
New Delhi

Subir Raha

Regulatory reforms: implementing strategies*

Transition to a liberalized environment: experiences and issues in regulation 481-495

Oil industry in India: a perspective

Till recently, India's petroleum industry was subjected to extensive checks and controls in every sphere of petroleum activity – E&P (exploration and production), refining, marketing, and distribution. The close regulation by the ministry was achieved through

- the OCC (Oil Coordination Committee) in the downstream petroleum sector, which performed the functions of planner, coordinator, adviser, and regulator
- direct control in the upstream sector.

The oil price hike in 1973/74 was a major shock, which propelled governments the world over to intervene in the oil sector. In countries like India, which were heavily dependent at that time on imported oil, the interventions were especially pronounced.

In the 1960s–1970s, a wave of nationalization covered all facets of the economy, including the oil sector. In India, foreign oil companies were taken over and the government brought the entire petroleum sector under its fold with a view to achieve regulated growth of oil companies. This was characterized by heavy government controls and justified on the basis of securing adequate, stable, and reasonably priced oil supplies. The oil sector was subjected to extensive licensing, restriction on trade in crude and products, and price controls with subsidy for the economically vulnerable sections of the society. The entire downstream industry operated under a cost-plus system, termed as APM (administered pricing mechanism) in industry parlance. Under this system, all downstream entities – refining, marketing, and distribution companies – are provided with a post tax return of 12% on their net worth.

In the 1980s, once again there were radical changes in policies across the developing countries, with the role of governments in the oil sector being increasingly questioned.

---

* The views expressed in this paper by the writer are in his personal capacity.

The world oil market changed significantly and many countries from Latin America and sub-Saharan Africa to East Asia reduced the extent of state control and moved closer to a competitive oil market. Most of these reforms have either been decontrol of the sector(s) inviting private participation or a more direct large-scale privatization programme.

Major considerations for deregulation

Worldwide, the regulated system suffers from major drawbacks.

- The APM, being a cost-plus system, shackles innovations and gives low premium to efficiency.
- The cost-plus system has led to non-optimal investment decisions which are not in conformity with market dynamics.
- Since product pricing is controlled by the government, political compulsions resulted in delay in revision of prices, leading to large under-recoveries at times.
- The regulated regime discourages foreign investment since transparency is a prerequisite in a market-driven system.
- Under the APM, there have been distortions in product prices, which have led to serious complications for the industry.
- With incremental investment being the need of the hour in all spheres of industry – E&P, refining, pipelines, ports, shipping, tonnage, terminals, and depots – domestic/international debt for these projects is unlikely to materialize in the maze of price controls and pool accounts. Under the regulated scenario, foreign investors are not willing to invest as transparency is low.

A new world order

With a more stable situation prevalent in the world oil market since the mid-1980s and a universal agreement worldwide on the merits of a free market, there has been a progressive decline in the extent of government intervention in the oil sector. These trends are also being increasingly witnessed across Asian economies; Japan, Malaysia, Thailand, and The Philippines are undergoing similar transition paths and moving away from a heavily regulated oil sector to more market-based systems. In India too, a combination of such factors has been at play. There has been a discernible move away from the previously followed heavily regulated policies to a more deregulated environment.

Various steps were initiated first for macroeconomic reforms by the Government of India including devaluation of the rupee, floating currency, attempts to control fiscal deficit, and changes in industrial/exim policy. This was followed by sectoral reforms. The debate on deregulating a key sector of the Indian economy, the petroleum sector, had been going on since early 1991 with the commencement of economic liberalization in India.

With an oil–gross domestic product elasticity of more than unity, India has been one of the world's fastest growing oil markets. Subsequent to reforms in 1991, oil consumption has been growing at a compound annual rate of growth of over 6% for the last three years, the rate of growth for the year 1995/96 being even higher at 10%. With a consumption of 79 million tonnes in 1996/97, India is the fourth-largest oil market in Asia. With the growth in demand expected to remain healthy over the next decade, projections indicate that demand in India would reach a level of 155 millions tonnes by 2006/07.

This would entail massive investments in all spheres of the oil sector. Estimated investments in the refining and marketing sectors alone for the Ninth Five-Year Plan (1997–2002) are about 258 billion rupees (7 billion dollars). Private capital would need to play a large role in supplementing efforts of the PSUs (public sector undertakings) in fuelling the need of the Indian economy.

Some of the key objectives for ushering in deregulation are listed below.

- Increased competition by allowing entry of more players in the market. A competitive environment provides the necessary boost for companies to deliver value to customers and provide products at reasonable prices.
- A sector driven by market forces is likely to attract investment capital and receive favourable responses from the international community, thereby facilitating investment in a deregulated market.
- Price decontrol will mitigate political interference in decisions relating to the economic pricing of petroleum products. The experience of the power sector in respect of domestic and agriculture tariffs is reflective of the effect of political interference on the health of the sector.

The objectives would desirably result in a large number of players in this sector. However, unless this is accompanied by a competitive environment, the objective of efficiency is unlikely to materialize. Against the above backdrop, the MoPNG (Ministry of Petroleum and Natural Gas) had set up an oil industry R Group (restructuring group) to prepare a detailed time-bound programme of reforms in the oil sector. The basic objective was to create conditions facilitating the

entry of the private sector in the Indian oil sector, which is expected to lead to a more competitive oil market.

R Group

The R Group was set up under the chairmanship of the Secretary, MoPNG. It comprised representatives from the public and private sectors and economists and other industry experts. The R Group made several recommendations and also prepared a time-bound programme for introducing reforms (see Annex 1).

In the meantime, several measures have already been put in place to encourage private participation in the petroleum sector and to dilute government holdings in existing PSUs. A large number of such measures relate to both the upstream and the downstream sectors. Of particular importance are the opening up of the upstream sector to private entrepreneurs, granting of permission to set up refineries in private or joint sectors, and introduction of parallel import and marketing of select petroleum products.

Proposed new regulatory framework

Vital sectors like hydrocarbons, which are extremely important for the economic development of the country and affect all spheres of life, cannot be left fully to market forces. Deregulation does not, in any way, imply a complete removal of all checks and balances in the system.

The OCC's role and activities in the downstream sector would undergo significant revision in the post-APM scenario. The OCC in its current form would no longer exist, and would be replaced by two bodies – the regulatory body and the Petrofed (Petroleum Federation). During the transition period, all the functions of the OCC would be performed by the regulatory body and Petrofed. In the final state, i.e., post-APM, some functions would become redundant and would be regulated automatically by the market.

The roles of the ministry and the regulatory body would be well defined. The government will continue to frame certain basic policies for the petroleum sector such as tariffs on crude and products, subsidy on sensitive products, allocation of superior kerosene oil for each state, product specifications, and issues of safety, health, and environment.

Implementing strategies

The functions of the proposed regulatory bodies in the upstream, downstream, and gas sectors are given in Annexes 2, 3, and 4.

The basic objective of putting a proposed regulatory framework in place is to protect consumer interest and ensure that consumers get best value in terms of quality, quantity, price, goods, and services. In order to achieve this, the regulatory framework should promote all activities and actions, which are important components in realizing this objective.

The nature and degree of regulation is dynamic and will change over time. The regulator will require authority to implement government policy in a climate of market uncertainty and would, therefore, need a range of powers – from the most active to the most passive. Therefore, the regulator would need to have both the flexibility and the authority to determine the appropriate degree of regulatory interventions. The regulator would have to be guided by two prime objectives (1) to promote and safeguard competition, and (2) to regulate with a light hand.

During the transition phase, the extent of regulation may have to be greater and more interventionist than under conditions of full competition.

It is also imperative to clearly define the lines of demarcation between the ministry and the regulatory authority, which would be valid both in transition and in a totally deregulated environment. The ministry's responsibility would be to set policies for the oil sector, i.e., define the rules under which companies will operate in the Indian oil sector. The regulatory body must ensure that rules laid down by the MoPNG are adhered to; existing players do not create barriers to entry for new players; the industry does not indulge in cartelization; the interests of the consumers are fully protected; and improvement/changes, if required, in policies and rules are recommended to the government.

The regulatory agency must be an independent institution, professionally managed with well-defined targets and accountability, and should not be a subordinate office of the ministry. This would be most essential in the transition phase where functions of regulatory agencies would be closely watched by prospective investors and the industry.

Independent funding of the agency would be a critical factor, perhaps through a cess on the sale of oil products or through budgetary appropriation of the government. The mechanics of the management of transition is as important as management in a totally deregulated scenario. It would be essential, during transition especially, to prioritize various functions and roles identified with the regulatory body. Such prioritization would take cognizance of the fact that during transition, existing bodies, for example, the OCC, would continue to function concurrently with the proposed regulatory bodies. The OCC has been doing an excellent coordination job in allocating crude to various supply plants, product movements from refineries, the shortfall being made up by imports, etc. Sudden withdrawal can only lead to dry-outs in far-flung areas and non-availability of crude. The transition from the OCC to regulatory body will have to be smooth and flawless to achieve the objectives of deregulation.

The regulatory authority would not only have to prioritize its functions and responsibilities but also draw a clear-cut time frame for various activities and inform the existing regulatory body requiring the switch-over of roles.

It is important to focus on the following aspects.

- The transition from current systems to the system where regulatory bodies take over has to be phased out smoothly.
- The prioritization of functions must be defined for each regulatory body. Functions crucial for implementation would need to be developed first, followed by gradual evolution of other roles.
- Coordination amongst the different regulatory bodies must be ensured. The government has proposed a structure for regulatory bodies which would consist of the government itself, the regulatory authority, and voluntary association of oil companies.

Presently, functions carried out by the ministry and the OCC would be distributed amongst these three bodies. While a few functions such as setting up of policies will remain with the government, other functions would be distributed among the regulatory authority and voluntary associations.

The role of regulatory bodies and those who will be regulated must be fully understood to enable smooth operations of the industry, especially in the initial phase. While it would be necessary to maintain an optimum distance from those who are being regulated, the regulatory body will have to adopt a partnership approach / participative management style. Workshops, seminars, communications, and public hearings would help to infuse confidence and spread the message of transparency. Knowledge-based decision-making, based upon sound economic, legal, and management research is mandatory.

With a view to facilitate implementation of the proposed regulatory structure, whether upstream, downstream, or gas, the schemes should have minimum provisions and the rest may be left for the government to decide whenever any serious problem which the regulator is unable to solve arises. The regulator's role has to be that of a developmental and information gathering body and supplier of this information to the industry.

A non-bureaucratic culture would be imperative for effective functioning. The industry would be looking for stable arrangements about basic issues such as how the market would work. Therefore, it would be necessary for the regulatory body to make the rules of the game absolutely clear, which should not change on a case-to-case basis. The policies and procedures of the government would have to be well defined to avoid unnecessary delays especially when huge investments are involved at high risk factors.

Entry and exit barriers have to be removed. Restructuring the ministry's functions is an important issue since its functions will be reduced and the ministry will assume a different character with the setting up of an independent regulator. A change inside and outside the ministry is essential. It is also important to ensure cohesive functioning between various ministries including the MoPNG, the MoST (Ministry of Surface Transport), the MoF (Ministry of Finance), the MoR (Ministry of Railways), and the MoEF (Ministry of Environment and Forests).

It would be necessary to have a goal-based approach with a view to evaluate the functioning and performance of the regulatory agency. The body must be given a concrete time frame for various activities with clear accountability for performance since a number of companies including PSUs would no longer operate in downstream alone but would opt for an integrated approach and hence, would have to coordinate actively with different regulatory bodies. Unless performance criteria and targets are fixed for regulatory authorities, it will become difficult for oil companies to meet their business plans.

Any rule framed by the regulator should be conducive to the fast development of infrastructure, which would be one of the most critical differentiators in a rapidly changing petroleum sector. Speedy execution of the infrastructure in a compressed time frame would certainly form a key performance area, especially in the transition phase. Accord of approvals for development of ports and joint ventures is an area where speedy and expeditious approvals would be needed.

The role of risk as an essential element of oil enterprise is well established. The regulatory body will have to create an environment for enterprises to take risks. Increased risk would also mean increased returns. In transition, the regulatory body while fixing rates should ensure that the same helps in encouraging investment in infrastructure. Any price intervention by the regulator must be discussed openly and with transparency.

The regulatory body must pay attention to developing spot markets, features, and options in the sector, which though very common in the international oil market, still do not exist in India. An important aspect where the regulatory body should not interfere in any way is concerning the manner of purchase that a particular company adopts. It would be essential to see that it has adequate information. In a competitive environment, companies would prefer to choose the best means of buying crude or products that may involve high risk but carry a promise of high return. Therefore, there should not be any interference from the regulatory body in specifying or laying down a certain share accruing from long-term contracts. At the same time, long-term supply arrangements are a function of interest of the supplier and buyer. It could be that a particular supplier feels secure (with a guaranteed return) and therefore prefers a long-term contract with a stable and assured buyer.

During the transition phase, the regulator must ensure free flow of products to enable oil companies to maximize value addition. Supply plans will have to be drawn up and the regulator will monitor these. Such a mechanism will however apply only to the transition stage.

The regulatory body has to play an equally important role in the completely deregulated environment. It needs to have effective enforcement machinery when the market is being exploited and when problems arise on account of cartelization. The regulatory body will function as a quasi-judicial authority to deal with direct complaints of consumers or complaints from oil operators against others and take necessary action. The body will have the role of watching, monitoring, anticipating, and directing the sector. Ensuring availability everywhere and concessional prices for certain sectors is an important function to be discharged by the government. The regulatory authority has only to decide whether the policies of the government are being followed by oil operators or not.

The regulatory body is responsible for effective coordination and interaction with various agencies such as the MoPNG, Petrofed; other regulatory bodies such as the DGH (Directorate General of Hydrocarbons), the Gas Regulatory Body, the Central Electricity Regulatory Commission; other bodies such as the Oil Industry State Directorate, the Centre of High Technology, the Petroleum Conservation Research Association, the Bureau of Indian Standards, pollution control boards; and other ministries like the MoEF, the Ministry of Industry, the MoST, the MoF, the Ministry of Power, and the Ministry of Coal.

The regulatory authority must interact closely with Petrofed both while defining the rules and regulations for effective operation of the downstream petroleum sector and in determining the qualifying criteria and measures of efficiency. The regulatory authority must get constant feedback from Petrofed to enable the commission to be responsive to the needs of industry and interpret and influence policy as required.

The regulatory authority would essentially ensure that government policy objectives are achieved in regulating the downstream oil sector. Thus the regulatory authority would derive its framework for regulation from the policy outlined by the Government of India. At the same time, the regulatory authority would be expected (since it would be well placed) to bring to the attention of the government any policy changes/ interventions required to achieve better safeguards for national and consumer interests.

While the functions of the regulatory authority have been defined to regulate the activities of the downstream oil industry, several backward and forward linkages would exist with other economic activity areas regulated by their own mechanism, e.g., E&P activities would be regulated by the DGH. As such, crude availability, which is an essential input to downstream activity, falls under the purview of the DGH. Similarly, the natural gas sector is likely to have its own regulatory mechanism, although there are several cross-influencing issues between natural gas and petroleum products, particularly arising from the fact that these are substitute energy forms. On the downstream side, the electricity sector is a major consumer of petroleum products. This sector shall be regulated by the Central Electricity Regulatory Commission and the state electricity regulatory commissions.

The regulatory authority, as part of its functions, would ensure compliance with standards/guidelines described by various bodies with regard to safety, health, environment, and quality issues relating to the downstream petroleum industry, products, and services. These bodies would include the Oil Industry State Directorate, the Centre of High Technology, the Petroleum Conservation Research Association, the Bureau of Indian Standards, and others. Hence apart from ensuring compliance with standards specified by such bodies, the regulatory authority would also provide the necessary feedback to these bodies on possible changes, modifications/ additions that may need to be put in place on the basis of its interactions with the industry, consumers, and a survey of the international literature.

A large number of other ministries or the Government of India would also be setting policies that would influence operations of the downstream petroleum sector. Most important among them are the MoF, the MoEF, the MoR, and the MoST. The regulatory authority would provide the necessary interaction between the various boards in the downstream petroleum sector and also set mechanisms in other ministries.

As regards local level coordinators, since it is envisaged that there will be a gradual shift to a market-driven system, the role of coordinators would get marginalized except in the event of emergency. In such situations, the existing coordinators, who move back to the parent company, and the dormant coordinators could be activated for a short period.

As mentioned earlier, the regulatory authority would have to be put in place along with the OCC with gradual transition in a phased manner.

On account of close linkages between various functions – E&P, downstream, and gas – it would be essential for regulatory bodies to ensure close coordination, especially with regard to functions which overlap. Issues which could be common to different regulatory bodies would need to be resolved through structured periodical meetings, etc., to facilitate faster decision-making which the industry investors would be looking for.

\nnex 1

Proposed phasing of reforms as envisaged by the R Group

Phase I 1996–98

- Rationalization of retention margin
- Withdrawal of the concept of a retention margin for refineries
- Deregulation of natural gas pricing
- Decanalization of furnace oil and bitumen
- Partial deregulation of the marketing sector including freedom to appoint dealers/distributors
- Removal of the subsidy on HSD (high speed diesel) / reduction of the subsidy on kerosene, LPG (liquefied petroleum gas), and input for fertilizers

Phase II 1998–2000

- Pricing of indigenous crude on the basis of average FoB (free on board) price of imported crudes (inclusive of cess and royalty)
- Rationalization of royalty and cess
- Further deregulation of the marketing sector
- Further reduction of subsidy on kerosene, LPG, and input for fertilizers

Phase III 2000–02

- Decanalization of aviation turbine fuel, HSD, and motor spirit

Annex 2

Functions and responsibilities: regulatory authority for the upstream sector

1 To provide technical advice to the MoPNG on issues relevant to the exploration and optimal exploitation of hydrocarbons in the country and on the strategy of taking up exploration and exploitation of oil and gas reserves abroad by national oil companies.

2 To review the exploration programmes of companies operating under Petroleum Exploration Licences granted under the Oilfields (Regulation and Development) Act, 1948 and the Petroleum and Natural Gas Rules, 1959 with a view to advising the government on the adequacy of these programmes.

3 To reassess the hydrocarbon reserves discovered and estimated by the operating companies in discussion with them.

4 To advise the government on the offering of acreage for exploration to companies as well as matters relating to relinquishment of acreage by companies.

5 To review the development plans for commercial discoveries of hydrocarbon reserves proposed by the operating companies and advise the government on the adequacy of such plans and exploitation rates proposed and matter relating thereto.

6 To review and audit concurrently the management of petroleum reservoirs by operating companies and advise on any mid-course correction required to ensure sound reservoir management practices in line with the optimal exploitation of reserves and the conservation of petroleum resources.

7 To regulate the preservation, upkeep, and storage of data and samples pertaining to petroleum exploration, drilling, production of reservoirs, etc., and to cause the preparation of data packages for acreage on offer to companies.

8 To advise the government on the laying down of safety norms and framing regulations on safety in oil field operations, prescribe pollution control measures, and assist in inspection and periodic safety audit.

9 To issue essentiality certificate for import of goods required in the oil industry for exploration and exploitation activities.

10 All other matters incidental thereto and such other functions as may be assigned by the government from time to time.

Annex 3

Functions and responsibilities: regulatory authority for the downstream sector

1 Subject to provisions of the Act, the regulatory authority shall have powers to issue directions, pass orders, and secure compliance in respect of the following functions through any person(s) charged with that responsibility.

- Implement the oil policy outlined by the Ministry of Petroleum and Natural Gas, emphasizing the guarantee of supply of products throughout the country.
- Protect consumers' interests with respect to price, quality, and availability of products and give necessary directions to ensure this.
- Require any potential investor interested in setting up a downstream facility – be it related to refining, import, transport infrastructure, marketing, or distribution – to submit an attested copy of the Memoranda of Entrepreneurship, provided that such submission shall not exempt the investor from securing all other statutory clearances with respect to quality, health, safety, and the environment from proper authorities.
- Levy fees at such rates and in respect of such services as may be determined by regulations.
- Regulate the working of the downstream oil organizations and promote their working in an efficient, economical, and equitable manner; and settle disputes between various entities connected with downstream oil operations.
- Promote competitiveness and progressively involve the participation of the private sector, while ensuring a fair deal to consumers.
- Promote fair trade and prevent cartelization and monopolies and combinations in restraint of trade and any unfair competition in the downstream oil industry; encourage practices that serve the public interest and are intended to achieve efficiency and cost reduction. For such purposes, the regulatory authority may resort to public hearing.
- Verify the compliance of strategic stock holdings, as per the coordinated plan submitted by Petrofed, with the government order covering both the quantity and the geographic location of such stocks, and ensure its proper management and disposal.
- Inspect, either directly or through agreements, with recognized authorities appointed by the regulatory authority, the activities of the petroleum industry including compliance with safety and environmental standards/guidelines, as well as apply administrative and monetary penalties foreseen by law, regulation, or

contract; also including the strategic stocks being held by the designated parties.

- Organize and maintain the information and technical data bank related to downstream petroleum activities; publish international oil prices so as to enhance public awareness towards determining the reasonableness of market prices; obtain demand forecast for petroleum products in different parts of the country from Petrofed for its own or government use. For this purpose, the regulatory authority may draw on other bodies for technical support/inputs.
- Oversee and encourage good practices with respect to the conservation and rational use of oil and its products and the preservation of the environment.
- Facilitate policy formulation that would further the above objectives and provide an interface through which interactions with other ministries / regulatory bodies on matters of common interest can be channelled.
- Assist the government in the planning and development of the downstream oil industry and in the management of crisis situations.
- Ensure transparency while exercising its power and discharging its functions.
- Give directions to concerned authorities.

2 The regulatory authority shall have the power to act as arbitrator or to nominate arbitrator or arbitrators to adjudicate and settle disputes arising between the companies in accordance with the provisions of this Act and the regulations to be prescribed and this shall be a condition of operation.

3 The regulatory authority will entertain the grievances brought to its attention by those parties that show cause of such grievances adversely affecting the efficient functioning of the downstream petroleum business or the protection of consumer interests vis-à-vis the downstream petroleum business including the delivery and usage of petroleum products.

Annex 4

Functions and responsibilities: regulatory authority for gas

1 The regulator shall prescribe guidelines for arriving at transportation tariffs and distribution charges.

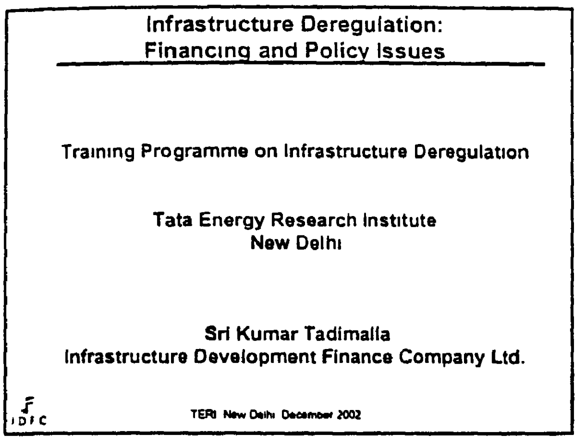
2 The regulator will also fix limits in respect of import cost of liquefied natural gas / natural gas and on cost of production of domestic gas. However, this will not be done on a case-by-case basis.

3 The regulator will select distribution companies for specific areas in a fair and transparent manner.

4 The regulator can intervene in cases of disputes.

5 The regulator will ensure that all gas supply contracts carry adequate conditions regarding quality of service and security of supply and can insist on compliance with prescribed safety standards.

Presentations



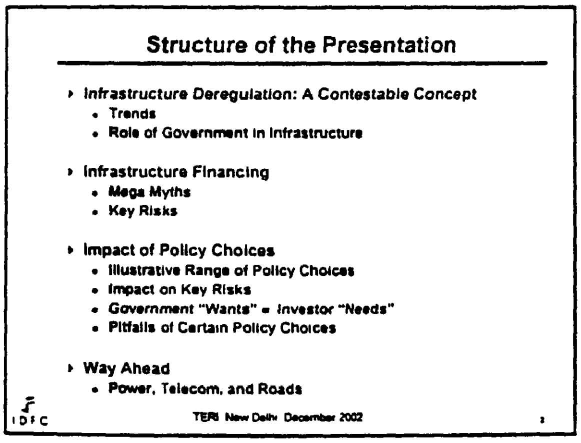
Infrastructure Deregulation: Financing and Policy Issues

Training Programme on Infrastructure Deregulation

Tata Energy Research Institute
New Delhi

Sri Kumar Tadimalla
Infrastructure Development Finance Company Ltd.

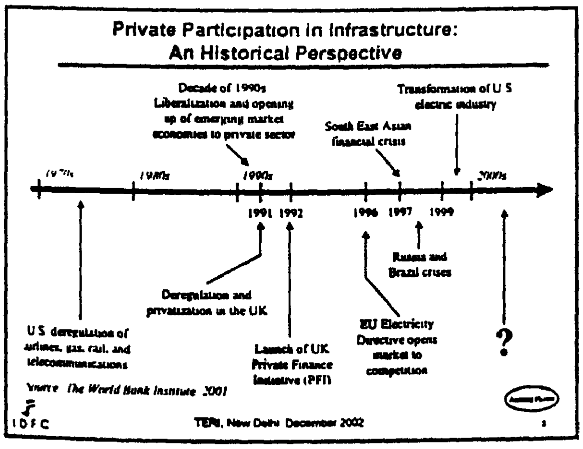
IDFC



Structure of the Presentation

- Infrastructure Deregulation: A Contestable Concept
  - Trends
  - Role of Government in Infrastructure
- Infrastructure Financing
  - Mega Myths
  - Key Risks
- Impact of Policy Choices
  - Illustrative Range of Policy Choices
  - Impact on Key Risks
  - *Government "Wants" ≠ Investor "Needs"*
  - Pitfalls of Certain Policy Choices
- Way Ahead
  - Power, Telecom, and Roads

IDFC



Private Participation in Infrastructure: An Historical Perspective

Decade of 1990s
Liberalization and opening up of emerging market economies to private sector

South East Asian financial crisis

Transformation of U S electric industry

U S deregulation of airlines, gas, rail, and telecommunications

Deregulation and privatization in the UK

Launch of UK Private Finance Initiative (PFI)

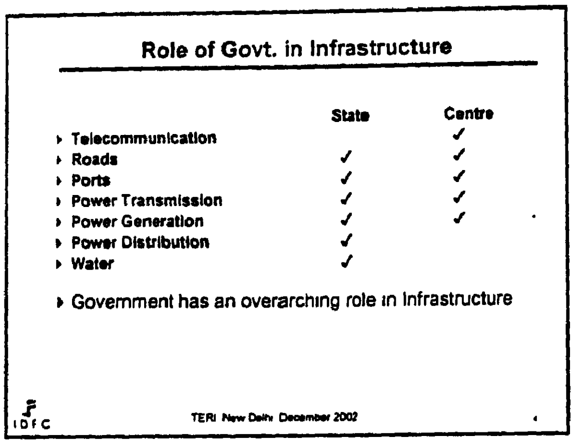
EU Electricity Directive opens market to competition

Russia and Brazil crises

?

Source *The World Bank Institute 2001*

IDFC

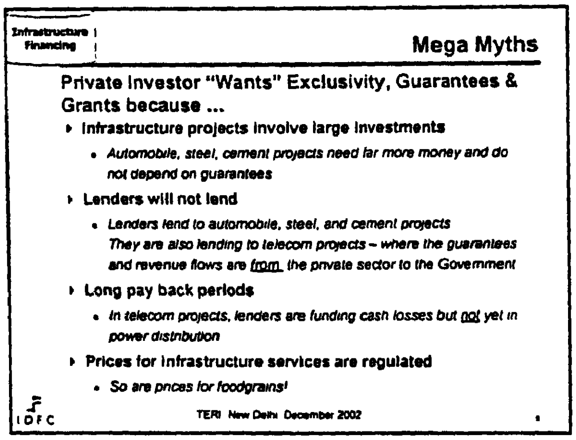


Role of Govt. in Infrastructure

	State	Centre
Telecommunication		✓
Roads	✓	✓
Ports	✓	✓
Power Transmission	✓	✓
Power Generation	✓	✓
Power Distribution	✓	
Water	✓	

- Government has an overarching role in Infrastructure

IDFC

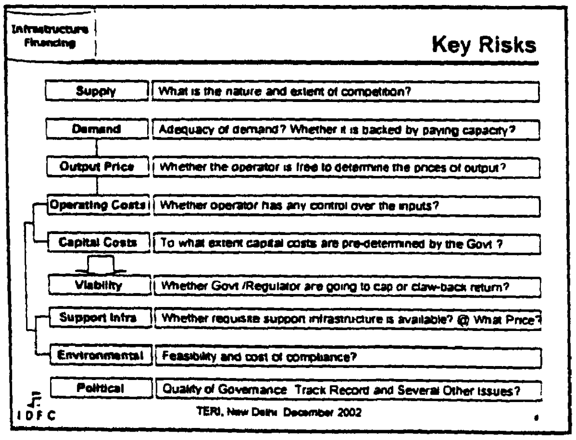


Mega Myths

Private Investor "Wants" Exclusivity, Guarantees & Grants because ...

- **Infrastructure projects involve large investments**
  - *Automobile, steel, cement projects need far more money and do not depend on guarantees*
- **Lenders will not lend**
  - *Lenders lend to automobile, steel, and cement projects They are also lending to telecom projects – where the guarantees and revenue flows are from the private sector to the Government*
- **Long pay back periods**
  - *In telecom projects, lenders are funding cash losses but not yet in power distribution*
- **Prices for infrastructure services are regulated**
  - *So are prices for foodgrains!*

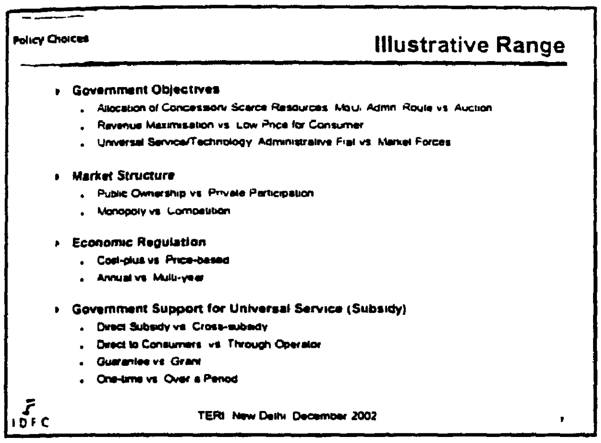
IDFC



Key Risks

Supply	What is the nature and extent of competition?
Demand	Adequacy of demand? Whether it is backed by paying capacity?
Output Price	Whether the operator is free to determine the prices of output?
Operating Costs	Whether operator has any control over the inputs?
Capital Costs	To what extent capital costs are pre-determined by the Govt ?
Viability	Whether Govt /Regulator are going to cap or claw-back return?
Support Infra	Whether requisite support infrastructure is available? @ What Price?
Environmental	Feasibility and cost of compliance?
Political	Quality of Governance Track Record and Several Other issues?

IDFC



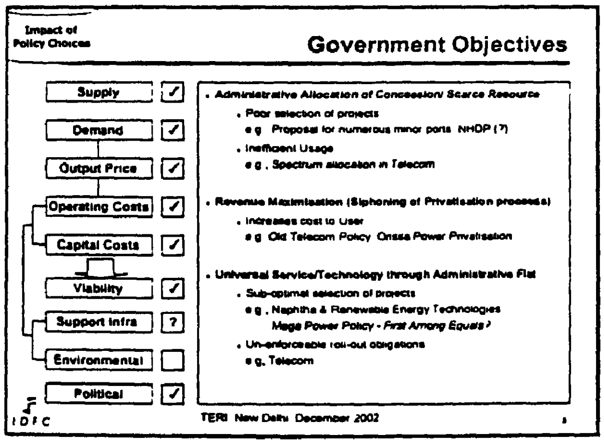
Policy Choices

Illustrative Range

- **Government Objectives**
  - Allocation of Concession/ Scarce Resources MoU Admn Route vs Auction
  - Revenue Maximisation vs Low Price for Consumer
  - Universal Service/Technology Administrative Fiat vs Market Forces
- **Market Structure**
  - Public Ownership vs Private Participation
  - Monopoly vs Competition
- **Economic Regulation**
  - Cost-plus vs Price-based
  - Annual vs Multi-year
- **Government Support for Universal Service (Subsidy)**
  - Direct Subsidy vs Cross-subsidy
  - Direct to Consumers vs Through Operator
  - Guarantee vs Grant
  - One-time vs Over a Period

IDFC

TERI New Delhi December 2002



Impact of Policy Choices

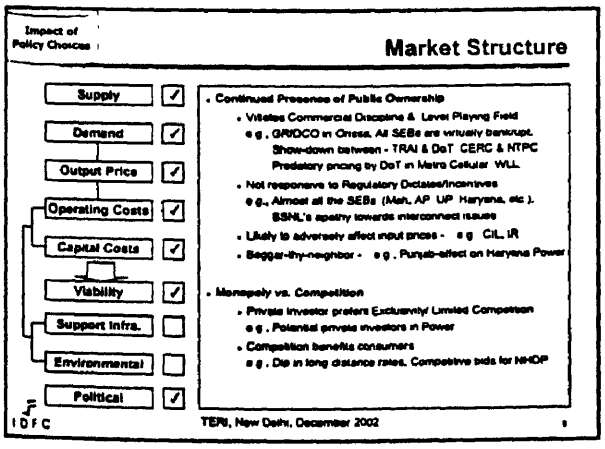
Government Objectives

- Supply ☑
- Demand ☑
- Output Price ☑
- Operating Costs ☑
- Capital Costs ☑
- Viability ☑
- Support Infra ?
- Environmental ☐
- Political ☑

- *Administrative Allocation of Concession/ Scarce Resource*
  - Poor selection of projects
    e g Proposal for numerous minor ports NHDP (?)
  - Inefficient Usage
    e g . *Spectrum allocation in Telecom*
- Revenue Maximisation (Siphoning of Privatisation process)
  - Increases cost to User
    e g Old Telecom Policy Orissa *Power Privatisation*
- Universal Service/Technology through Administrative Fiat
  - Sub-optimal selection of projects
    e g . Naphtha & Renewable Energy Technologies
    Mega Power Policy - First Among Equals ?
  - Un-enforceable roll-out obligations
    e g. Telecom

IDFC

TERI New Delhi December 2002



Impact of Policy Choices

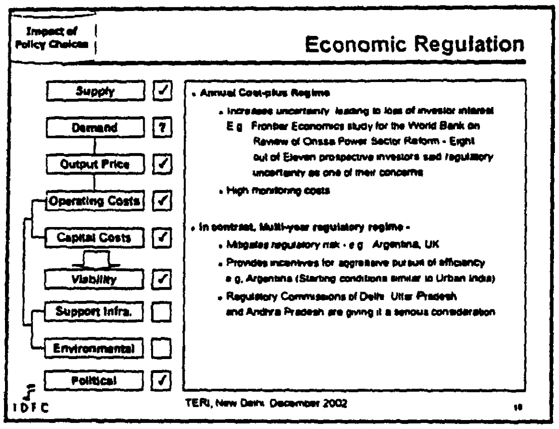
Market Structure

- Supply ☑
- Demand ☑
- Output Price ☑
- Operating Costs ☑
- Capital Costs ☑
- Viability ☑
- Support Infra. ☐
- Environmental ☐
- Political ☑

- Continued Presence of Public Ownership
  - Vitiates Commercial Discipline & Level Playing Field
    e g . GRIDCO in Orissa. All SEBs are virtually bankrupt.
    Show-down between - TRAI & DoT CERC & NTPC
    Predatory pricing by DoT in Metro Cellular WLL
  - Not responsive to Regulatory Dictates/Incentives
    e g., Almost all the SEBs (Mah, AP UP Haryana, etc).
    BSNL's apathy towards interconnect issues
  - Likely to adversely affect input prices - e g CIL, IR
  - Beggar-thy-neighbor - e g . Punjab-effect on Haryana Power
- Monopoly vs. Competition
  - Private investor prefers Exclusivity/ Limited Competition
    e g . Potential private investors in Power
  - Competition benefits consumers
    e g . Dip in long distance rates. Competitive bids for NHDP

IDFC

TERI, New Delhi, December 2002


Impact of Policy Choices

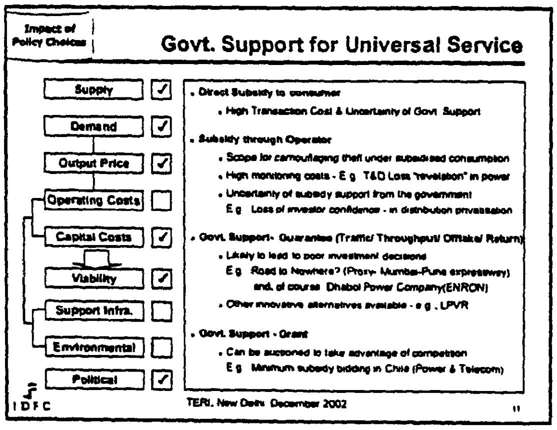
Economic Regulation

- Supply ☑
- Demand ?
- Output Price ☑
- Operating Costs ☑
- Capital Costs ☑
- Viability ☑
- Support Infra. ☐
- Environmental ☐
- Political ☑

- Annual Cost-plus Regime
  - Increases uncertainty leading to loss of investor interest
    E g Frontier Economics study for the World Bank on Review of Orissa Power Sector Reform - Eight out of Eleven prospective investors said regulatory uncertainty as one of their concerns
  - High monitoring costs
- In contrast, Multi-year regulatory regime -
  - Mitigates regulatory risk - e g Argentina, UK
  - Provides incentives for aggressive pursuit of efficiency
    e g. Argentina (Starting conditions similar to Urban India)
  - Regulatory Commissions of Delhi Uttar Pradesh and Andhra Pradesh are giving it a serious consideration

IDFC

TERI, New Delhi December 2002


Impact of Policy Choices

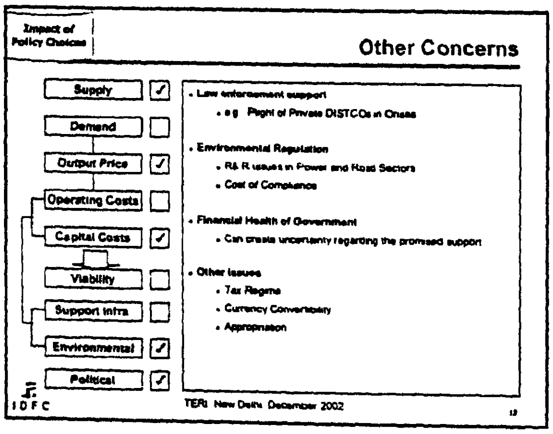
Govt. Support for Universal Service

- Supply ☑
- Demand ☑
- Output Price ☑
- Operating Costs ☐
- Capital Costs ☑
- Viability ☑
- Support Infra. ☐
- Environmental ☐
- Political ☑

- Direct Subsidy to consumer
  - High Transaction Cost & Uncertainty of Govt Support
- Subsidy through Operator
  - Scope for camouflaging theft under subsidised consumption
  - High monitoring costs - E g T&D Loss "revelation" in power
  - Uncertainty of subsidy support from the government
    E g Loss of investor confidence - in distribution privatisation
- Govt. Support- Guarantee (Traffic/ Throughput/ Offtake/ Return)
  - Likely to lead to poor investment decisions
    E g Road to Nowhere? (Proxy- Mumbai-Pune expressway) and, of course Dhabol Power Company(ENRON)
  - Other innovative alternatives available - e g . LPVR
- Govt. Support - Grant
  - Can be auctioned to take advantage of competition
    E g Minimum subsidy bidding in Chile (Power & Telecom)

IDFC

TERI, New Delhi December 2002


Impact of Policy Choices

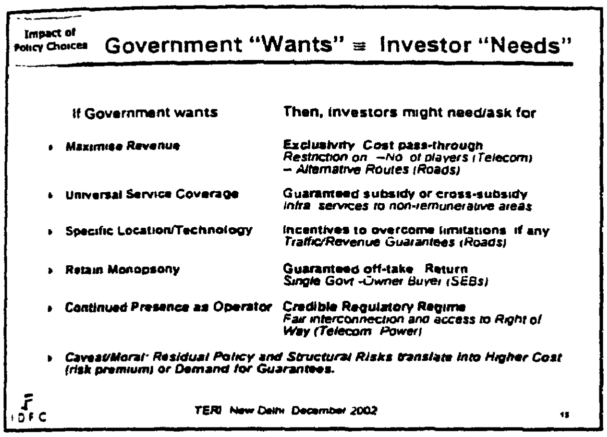
Other Concerns

- Supply ☑
- Demand ☐
- Output Price ☑
- Operating Costs ☐
- Capital Costs ☑
- Viability ☐
- Support Infra ☐
- Environmental ☑
- Political ☑

- Law enforcement support
  - e g Flight of Private DISTCOs in Orissa
- Environmental Regulation
  - R& R issues in Power and Road Sectors
  - Cost of Compliance
- Financial Health of Government
  - Can create uncertainty regarding the promised support
- Other issues
  - Tax Regime
  - Currency Convertibility
  - Appropriation

IDFC

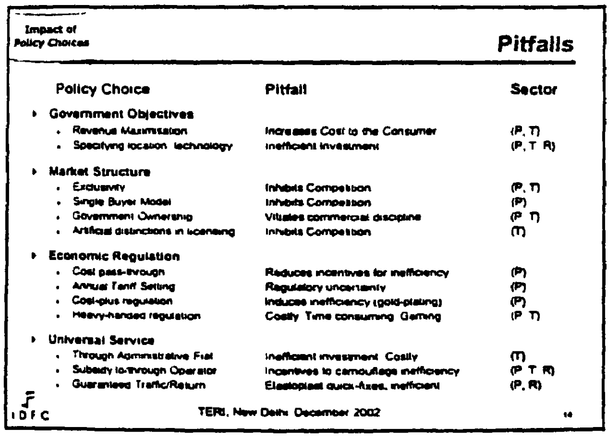
TERI New Delhi December 2002



Government “Wants” ≡ Investor “Needs”

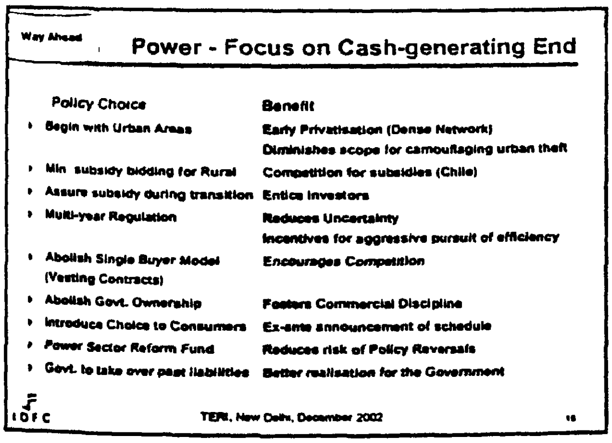
If Government wants	Then, investors might need/ask for
- *Maximise Revenue*	**Exclusivity Cost pass-through** *Restriction on –No of players (Telecom)* *– Alternative Routes (Roads)*
- Universal Service Coverage	**Guaranteed subsidy or cross-subsidy** *Infra services to non-remunerative areas*
- Specific Location/Technology	**Incentives to overcome limitations if any** *Traffic/Revenue Guarantees (Roads)*
- Retain Monopsony	**Guaranteed off-take Return** *Single Govt -Owner Buyer (SEBs)*
- *Continued Presence as Operator*	**Credible Regulatory Regime** *Fair interconnection and access to Right of Way (Telecom Power)*

- *Caveat/Moral: Residual Policy and Structural Risks translate into Higher Cost (risk premium) or Demand for Guarantees.*



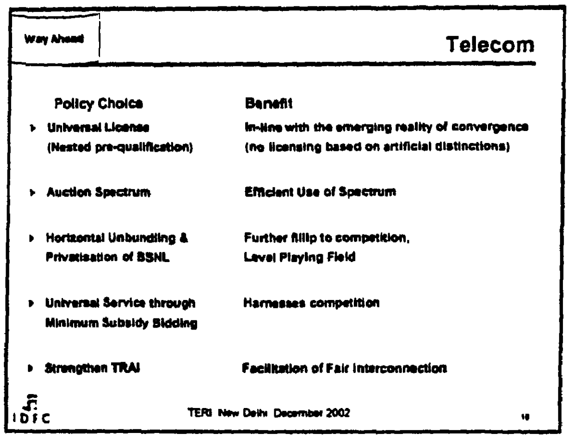
Pitfalls

Policy Choice	Pitfall	Sector
- **Government Objectives**		
• Revenue Maximisation	Increases Cost to the Consumer	(P, T)
• Specifying location technology	Inefficient Investment	(P, T R)
- **Market Structure**		
• Exclusivity	Inhibits Competition	(P, T)
• Single Buyer Model	Inhibits Competition	(P)
• Government Ownership	Vitiates commercial discipline	(P T)
• Artificial distinctions in licensing	Inhibits Competition	(T)
- **Economic Regulation**		
• Cost pass-through	Reduces incentives for inefficiency	(P)
• Annual Tariff Setting	Regulatory uncertainty	(P)
• Cost-plus regulation	Induces inefficiency (gold-plating)	(P)
• Heavy-handed regulation	Costly Time consuming Gaming	(P T)
- **Universal Service**		
• Through Administrative Fiat	Inefficient investment Costly	(T)
• Subsidy to-through Operator	Incentives to camouflage inefficiency	(P T R)
• Guaranteed Traffic/Return	Elastoplast quick-fixes, inefficient	(P, R)



Power - Focus on Cash-generating End

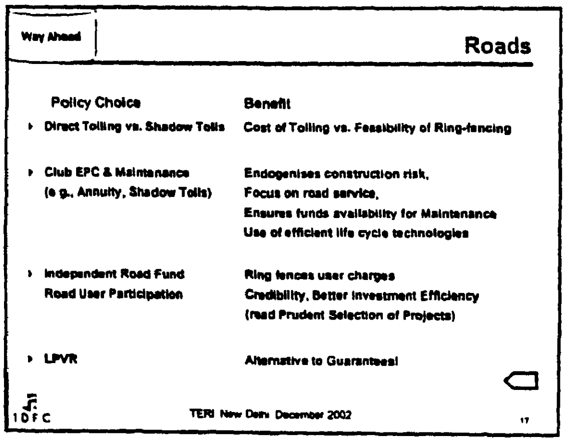
Policy Choice	Benefit
- **Begin with Urban Areas**	**Early Privatisation (Dense Network)** **Diminishes scope for camouflaging urban theft**
- **Min subsidy bidding for Rural**	**Competition for subsidies (Chile)**
- **Assure subsidy during transition**	**Entice investors**
- **Multi-year Regulation**	**Reduces Uncertainty** **Incentives for aggressive pursuit of efficiency**
- **Abolish Single Buyer Model (Vesting Contracts)**	***Encourages Competition***
- **Abolish Govt. Ownership**	**Fosters Commercial Discipline**
- **Introduce Choice to Consumers**	**Ex-ante announcement of schedule**
- ***Power Sector Reform Fund***	**Reduces risk of Policy Reversals**
- **Govt. to take over past liabilities**	***Better realisation for the Government***



Way Ahead

Telecom

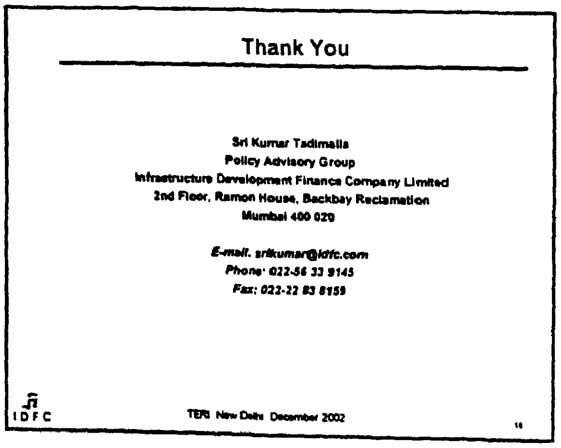
Policy Choice	Benefit
▸ Universal License (Nested pre-qualification)	In-line with the emerging reality of convergence (no licensing based on artificial distinctions)
▸ Auction Spectrum	Efficient Use of Spectrum
▸ Horizontal Unbundling & Privatisation of BSNL	Further fillip to competition, Level Playing Field
▸ Universal Service through Minimum Subsidy Bidding	Harnesses competition
▸ Strengthen TRAI	Facilitation of Fair Interconnection



Way Ahead

Roads

Policy Choice	Benefit
▸ Direct Tolling vs. Shadow Tolls	Cost of Tolling vs. Feasibility of Ring-fencing
▸ Club EPC & Maintenance (e.g., Annuity, Shadow Tolls)	Endogenises construction risk, Focus on road service, Ensures funds availability for Maintenance Use of efficient life cycle technologies
▸ Independent Road Fund Road User Participation	Ring fences user charges Credibility, Better Investment Efficiency (read Prudent Selection of Projects)
▸ LPVR	Alternative to Guarantees!



Thank You

Sri Kumar Tadimalla
Policy Advisory Group
Infrastructure Development Finance Company Limited
2nd Floor, Ramon House, Backbay Reclamation
Mumbai 400 020

E-mail. srikumar@idfc.com
Phone: 022-56 33 9145
Fax: 022-22 83 8159

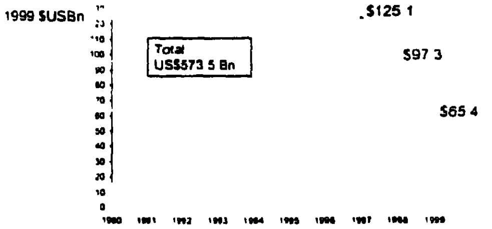
LPVR

- Monopoly Road Stretches are a special case of competition for the market
  - Private entrepreneur has little control over traffic
  - Makes little sense to transfer traffic risk as it will only increase risk premium and cost
    - *Alternative Stretches are like other projects*
- Need for innovative auction mechanisms like the Least Present Value of Revenue (LPVR) Auction
  - Traffic Risk is converted to risk regarding duration of the BOT concession period
    - *This type of duration risk (asset-liability mismatch) can be handled by financial institutions*
  - Renegotiation is more transparent
    - Since the Total Expected Discounted Revenue is known from the bid and the Discounted Revenue already obtained is known there is a natural cap on the extent of damage suffered

---

Annual Flows to PPI Projects in Developing Countries

- Private activity declined in 1998 from a high in 1997, falling most in East Asia and in energy.



Source The World Bank Institute, 2001

Privatisation of Electricity Distribution in Orissa

- a case study

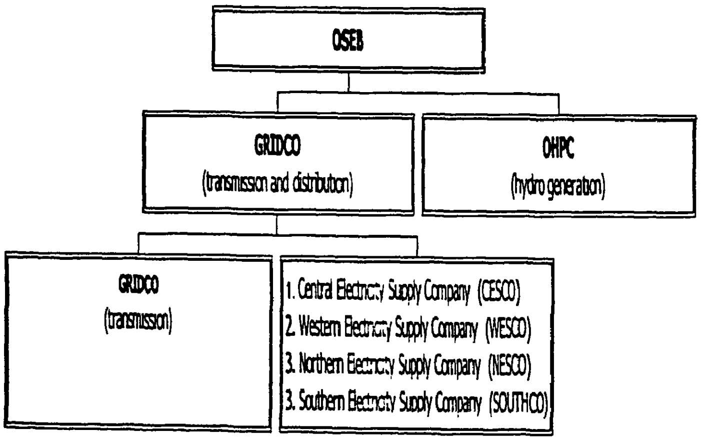
Overview of the Case Study

- ❖ The Context of Reform
- ❖ Preparatory Work for Reform Implementation
- ❖ Reform Blueprint
- ❖ Unbundling and Corporatisation of OSEB
- ❖ Process of Privatisation
- ❖ Post-Privatisation Scenario
- ❖ Views on the Outcome of Reforms

Reform Blueprint

- ❖ Reform Bill
- ❖ Creation of the Orissa Electricity Regulatory Commission
- ❖ Unbundling the OSEB into separate corporations for generation, transmission and distribution
- ❖ Privatisation of distribution

Unbundling and Corporatising the OSEB



OSEB

GRIDCO
(transmission and distribution)

OHPC
(hydro generation)

GRIDCO
(transmission)

1. Central Electricity Supply Company (CESCO)
2. Western Electricity Supply Company (WESCO)
3. Northern Electricity Supply Company (NESCO)
3. Southern Electricity Supply Company (SOUTHCO)

The Process of Privatization

- Different models of disinvestment discussed
- Selected model: JV with 51% private equity
- Strategy
  - **Begin with Management Contract in 1 zone**
  - **Sequential Privatization**
- After premature termination of Management Contract - Simultaneous Privatisation
- Process: **Request for Qualification, Information Memorandum, Due Diligence, Request for Proposal, Bid Analysis, negotiation and award**

Outcome: 3 zones awarded to BSES; 1 to AES

Post-Privatisation Scenario

- Financial Performance of DISTCOs
- Termination of Government Subsidies
- Operational Performance of DISTCOs (billing, collection, metering, quality of service)
- Impact of 1999 Cyclones
- AES Exit
- Rural Electrification

Views on the Outcome of the Reforms

- ❖ Orissa Legislative Assembly Debate
- ❖ Kanungo Committee Report 2001
- ❖ OERC tariff order for FY 2001/02
- ❖ Montek Singh Ahluwalia Committee Report
- ❖ Various journals and articles

The Assignment

Thank You

Electricity Deregulation - Issues & Concerns

V Raghuraman
Senior Advisor - Energy
Confederation of Indian Industry

CII

Regulation- Issues & Concerns

- In the presence of imperfections, such as existence of natural monopolies, market may fail to yield independently efficient competitive pricing solutions
- In such cases, intervention by a third party, such as regulatory body may be required to establish prices that are
  - *quasi-efficient*
  - *but often required to serve certain social objectives*

CII

Regulation- Issues & Concerns

- **In most countries of Eastern Europe and the CIS, process of electricity tariff determination *per se* strictly controlled by regulators**
- **The main obstacle of the price regulation is the *information asymmetry* between the regulator and regulated firm**

CII

Regulation- Issues & Concerns

- Hence, it is desirable to move to a competitive structure so that less reliance needs to be placed on the imperfect mechanism of regulation.
- **Regulation, thus seen to be a temporary measure and may be designed to create an enabling environment towards a competitive structure**

CII

Regulation- Issues & Concerns

- Ideology of market reform, often equated with deregulation, liberalization or privatization seems to have gone out of window with California, ENRON & Brazil
- Experiences show that ideology of free markets in energy services is not sufficient
- Careful market design and effective regulatory regimes are also essential.

Deregulation

- Deregulation in the power industry works well only when there is over-capacity
- Deregulation in the electricity sector removes price controls and openly encourages market entry
- Developed countries like **Norway, Sweden, Finland, UK and New Zealand**, electricity business has been opened for competition

Deregulation

- In a regulated market, there is little need for hedging electricity price risk because of the deterministic nature of prices
- The physical nature of electricity does not allow a true electricity spot market
- Electricity pools are a substitute for such spot markets.

Deregulation

- Pool purchasing prices and supply contracts are set by auction some time in advance of physical delivery.
- Pool selling prices are established by adding the cost of imbalance, load curve related charges and charges for ancillary services to the pool-purchasing prices.
- Retail electricity companies, large consumers and entrants are increasing their use of electricity derivatives to hedge against the price volatility in deregulated era

Deregulation

- The nature of electricity and the behavior of electricity prices differs from that of other commodity markets since
  - electricity is a non-storable good and
  - there have been significant variations of demand (and price) within a day, between the days and among the months.

CII

Deregulation

- Since electricity demand is highly inelastic and weather- dependent, electricity and weather derivative markets have been established at various locations in the USA and Europe.
- The recent experience in California has emphasized the importance of such markets.

CII

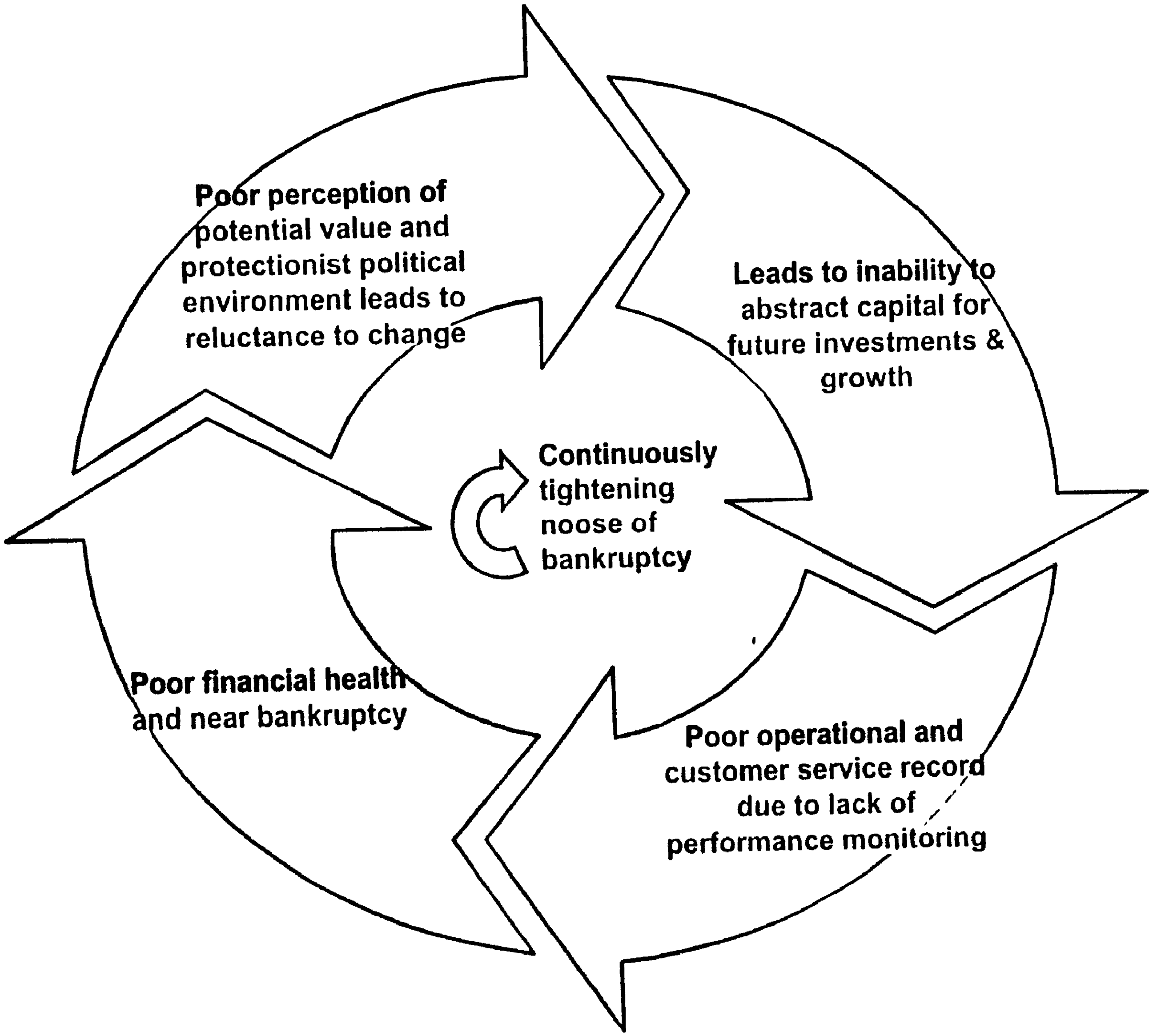
Indian Power Sector

- Indian power sector needs special attention to propel the economic growth
- Root problem in the power sector is the declining financial viability of the SEBs
- Rationalisation of tariffs perhaps the most important pre-requisite to turn around the sector from 'bankruptcy to bankability'

CII

SEBs ARE IN A VISCIOUS CYCLE OF UNDERPERFORMANCE

CONCEPTUAL



Poor perception of potential value and protectionist political environment leads to reluctance to change

Leads to inability to abstract capital for future investments & growth

Poor operational and customer service record due to lack of performance monitoring

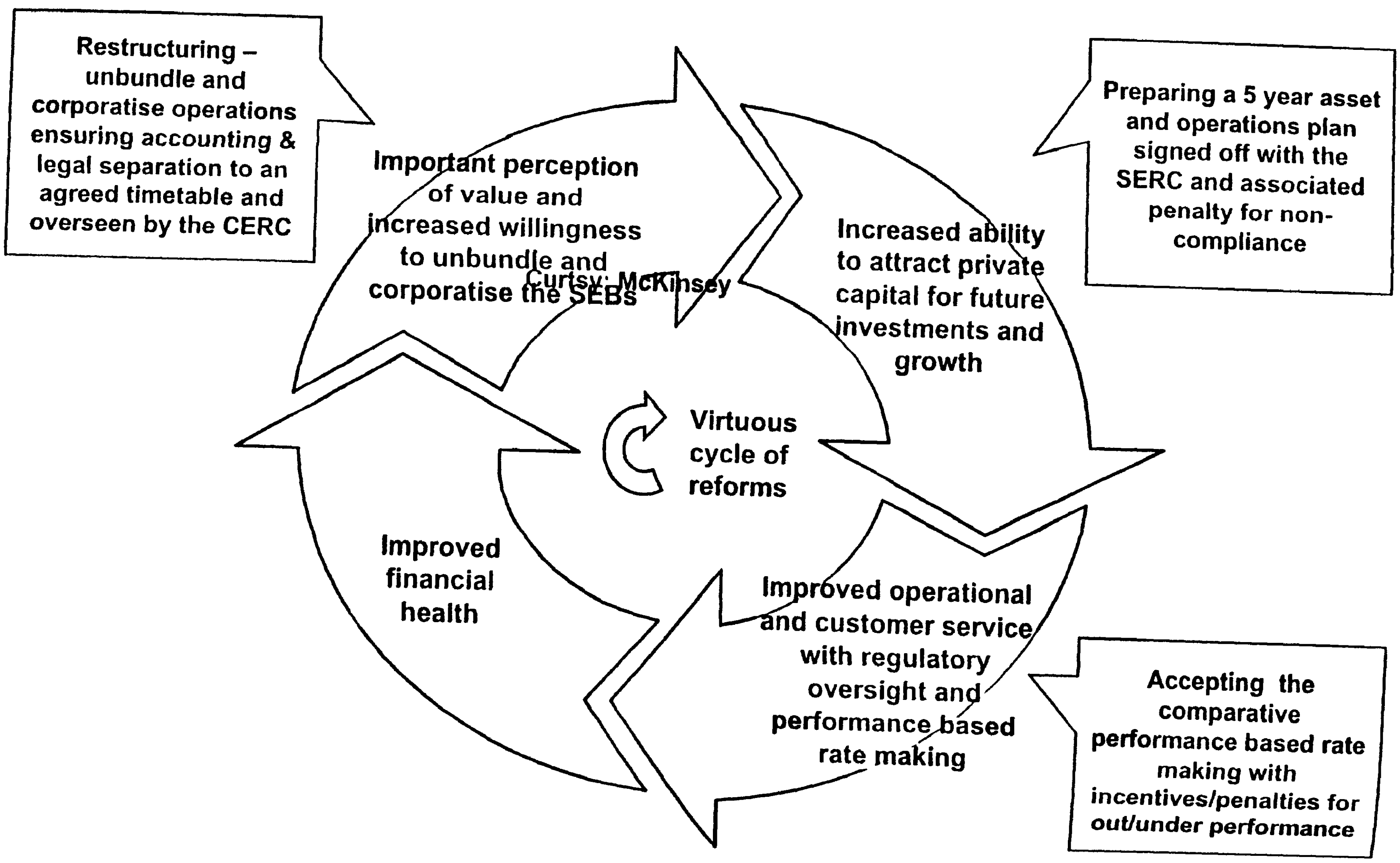
Poor financial health and near bankruptcy

Continuously tightening noose of bankruptcy

Curtsy: McKinsey

SEBs NEED TO COMMIT THEMSELVES TO REFORMS

= *Required Commitments*



Restructuring – unbundle and corporatise operations ensuring accounting & legal separation to an agreed timetable and overseen by the CERC

Preparing a 5 year asset and operations plan signed off with the SERC and associated penalty for non-compliance

Accepting the comparative performance based rate making with incentives/penalties for out/under performance

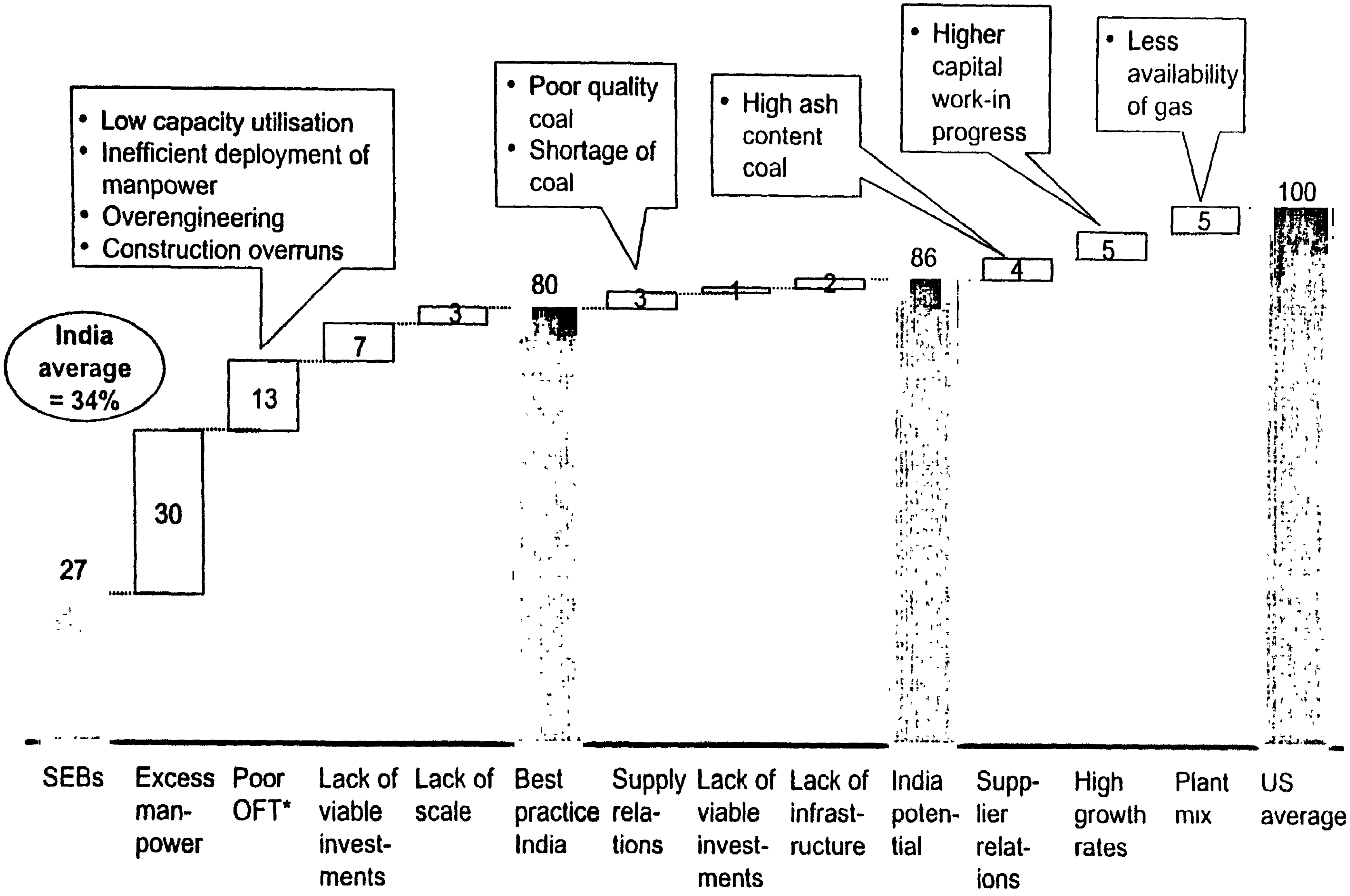
Important perception of value and increased willingness to unbundle and corporatise the SEBs
Increased ability to attract private capital for future investments and growth
Improved operational and customer service with regulatory oversight and performance based rate making
Improved financial health
Virtuous cycle of reforms

Curtsy: McKinsey

Curtsy: McKinsey

OPERATIONAL REASONS FOR PRODUCTIVITY GAP – GENERATION

Index :US = 100

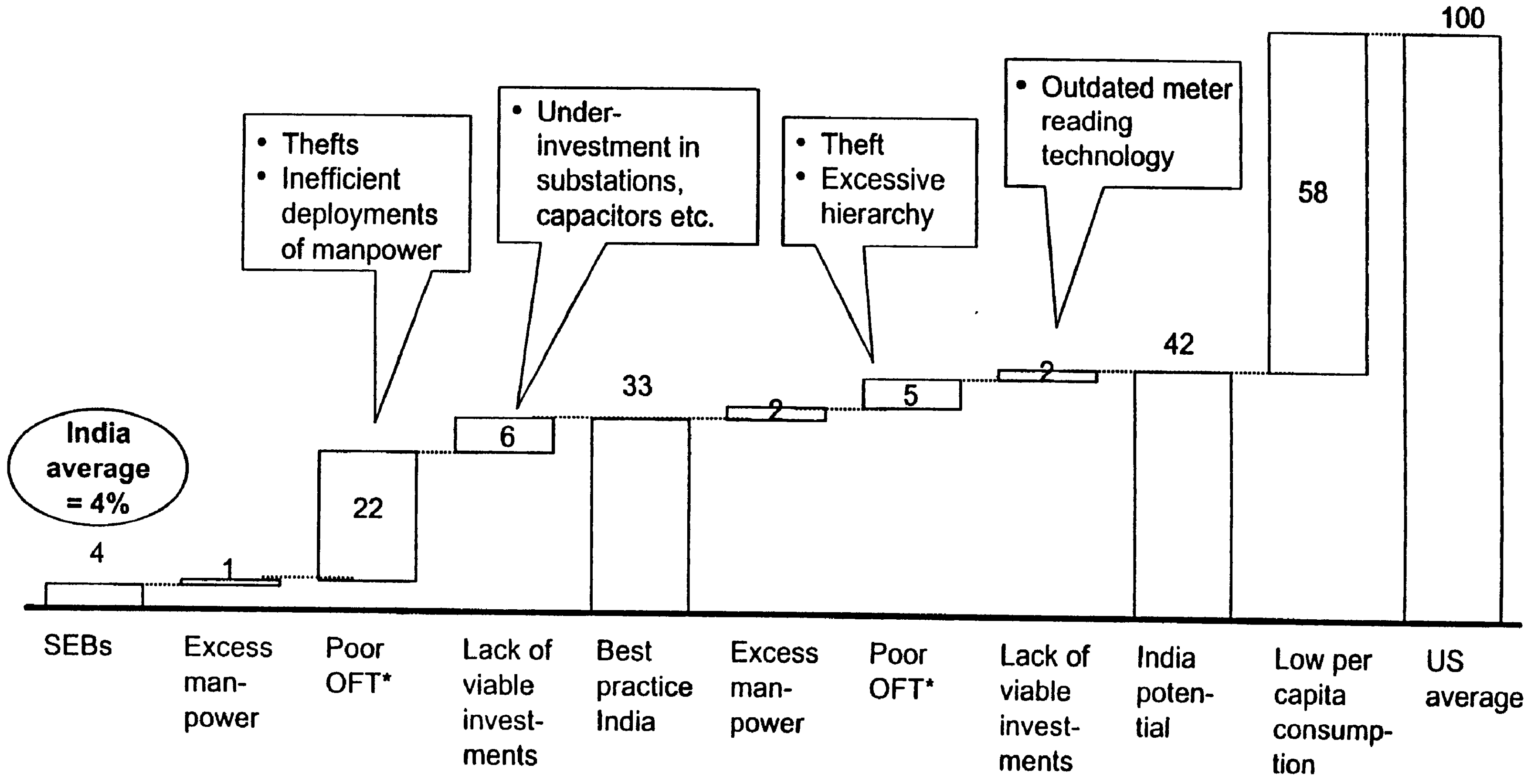


* Organisation of functions and tasks

Source: Planning Commission; CEA; EIA; ASI; Interviews; McKinsey analysis

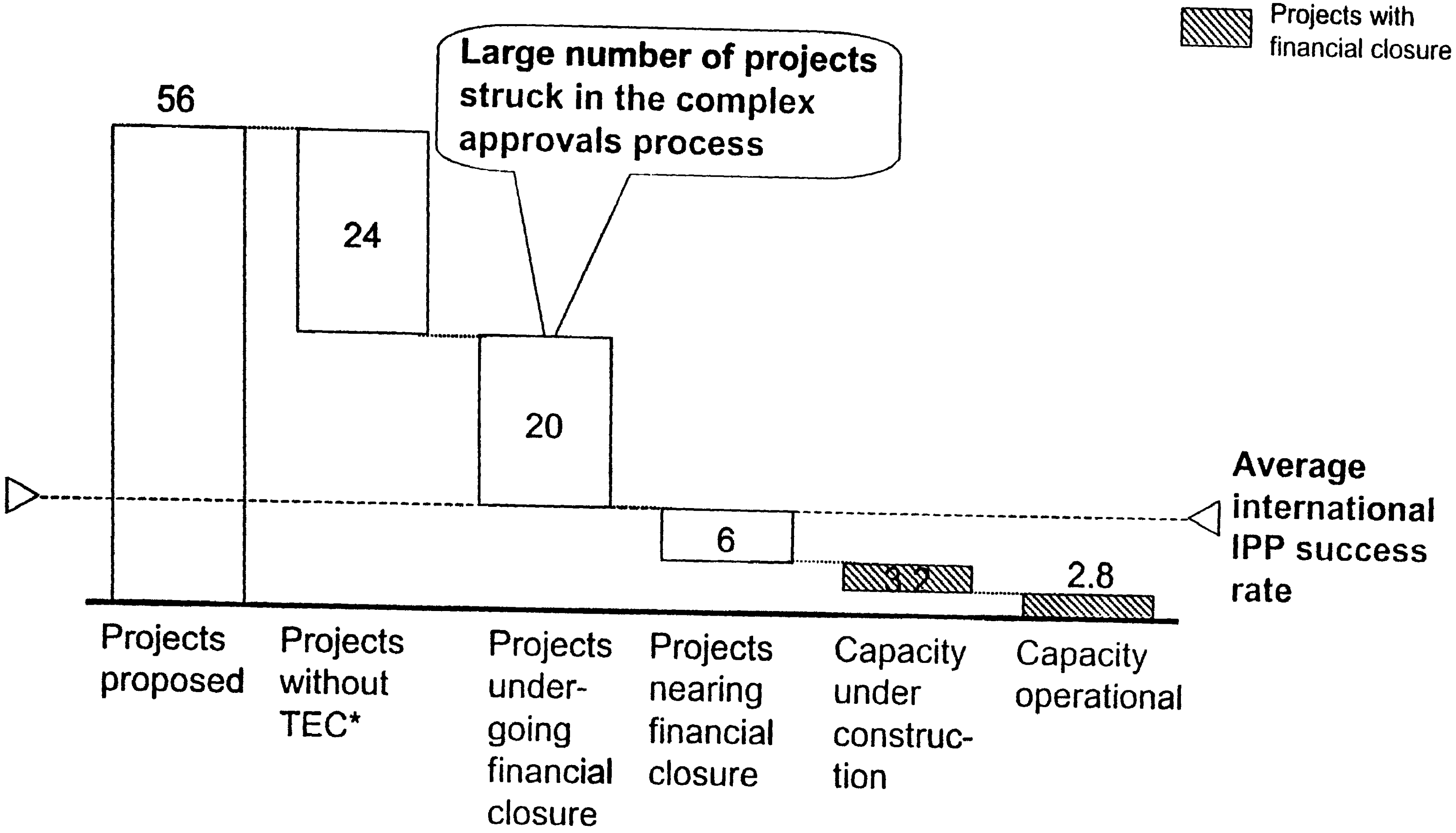
OPERATIONAL REASONS FOR PRODUCTION GAP – T&D

Index :US = 100



RESTRUCTURING THE IPP APPROVALS PROCESS IS IMPERATIVE

GW



* Techo-Economic Clearance

Source: Powerline IPP report, 2001 and McKinsey analysis

Indian Power Sector

- Reforms in Indian Power Sector are underway and regulatory commissions have been set up to determine tariffs based on economic rationale in order to promote **competition, investment and efficiency in the resource starved power sector**
- **However, tariff orders issued by SERCs are often being unimplemented due to vested political interests.**

CII

Indian Power Sector

- **Most of the Eurasian countries are in transition phase like India**
- **However, in the Indian context with the reforms in the nascent stage, the experience of Eurasian countries will be more appropriate.**

CII

Indian Power Sector

- A review of the tariff structure of these countries revealed that the
  - transmission and distribution tariffs in India could adopt rate of return or RPI – X methods
- A rational tariff policy needs to be evolved to make Indian power sector perform

CII

Indian Power Sector

- A multi-year tariff regime, where the guidelines, rules and method for determining tariff are well established would be beneficial
  - in minimizing risk and
  - building confidence for the investors

CII

Indian Power Sector

- It also helps to promote efficiency and for consumers, improvement in efficiency translates into more cost-effective tariff.
  - Example: UK & Argentina
- Full reimbursement of the amount of technical T & D losses should be done through the tariffs

---

Results of National Level Consumer Attitude Survey

- Most of the consumers are ready to pay higher tariff for better quality of supply of power
- Subsidizing agricultural tariff has not been able to satisfy consumers, cost-effective tariff in return for improvised service is preferred
- Although consumers are in favour of tariff rationalization, their awareness towards the impact of tariff rationalization and privatization still poor.

Gas Issues

- Recent gas discoveries in the K-G Basin significantly restructure the future energy mix
- Demand for gas in power sector increasing significantly
- Many issues remain to be decided in advance keeping considerations of economy and security in mind, like

CII

Gas Issues (Contd.)

- As yet no clear provisions to regulate the import of LNG
- Present formula for gas pricing does not take account of domestic & international market forces
- No provision for open access to pipelines, GAIL has monopolistic power
- A gas regulator must be in place
- Question of uniform rate of indirect taxation over the country as a whole needs to be resolved
- Pricing must ideally be left to market forces or to the regulator

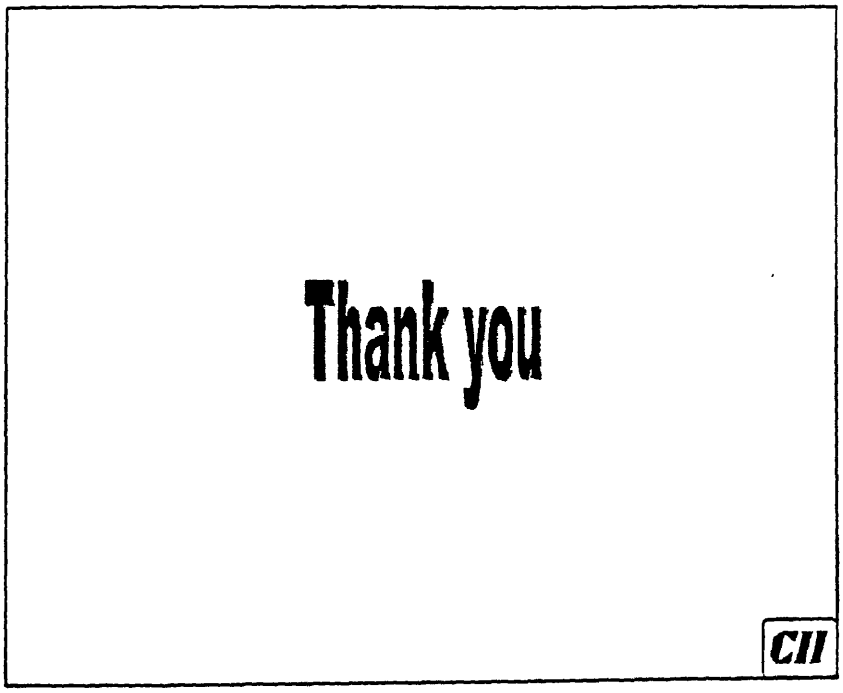
CII

Other Issues

- Indian energy sector has been structurally handled by five different ministries and power, for example, is a concurrent subject of both center and states.
- Although reforms in the energy sector are underway, the pace of reform are different in the sub-sectors viz. power, coal, oil, gas and renewables.

Other Issues (Contd.)

- In this regard, it is important to explore the possibilities whether all these sub-sectors can be co-ordinated by a single regulatory framework to determine optimal fuel mix and tariffs.
- In India, demand projections often found to be over-estimated. For long term demand projection, review needs to be done in a regular interval after incorporating all available information.



Thank you

CII

Regulation of a Private Power Utility

- Noida Case Study

Presentation at the IAS Training Program at TERI

December 10, 2002 **P.Neogi**

Noida Power Company Ltd.

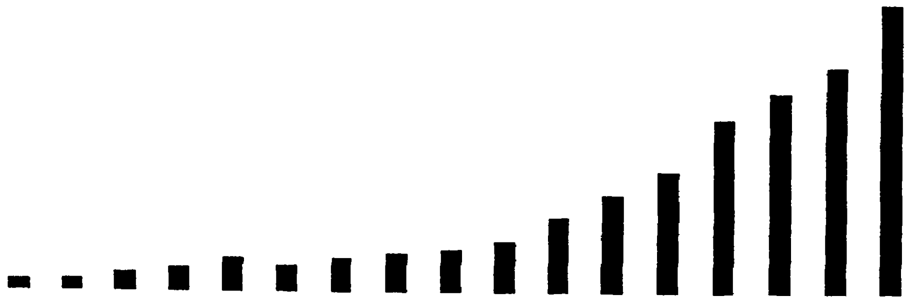
Introduction

Indian Power Sector

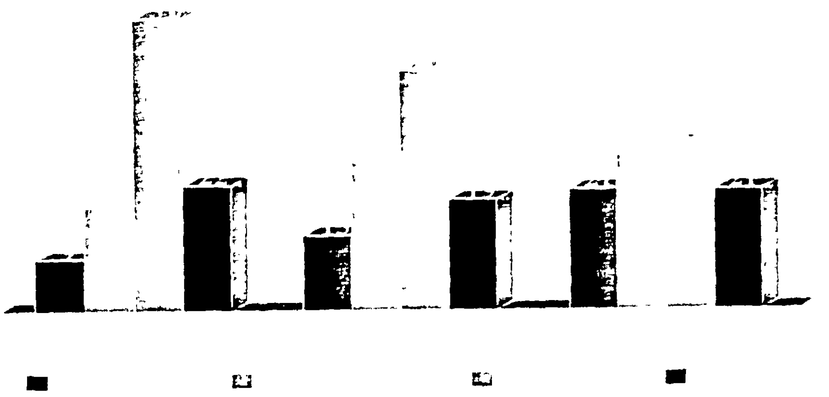
- Galloping Losses
  - ✓ Average tariff in 2001-02 at Rs.2.40 against cost of supply of Rs.3.50
  - ✓ Combined commercial losses in 2001-02 Rs.332 bn (1.5% of GDP), up from Rs.15 bn in 1985-86
  - ✓ Peak demand shortage 13%, energy 8% %energy losses > 50%, consumption by unprofitable consumers 50%
  - ✓ Receivables in 1999-00 Rs.248 bn, amounting to 40% of running annual revenue

---

Commercial Losses of SEBs



Energy Sales



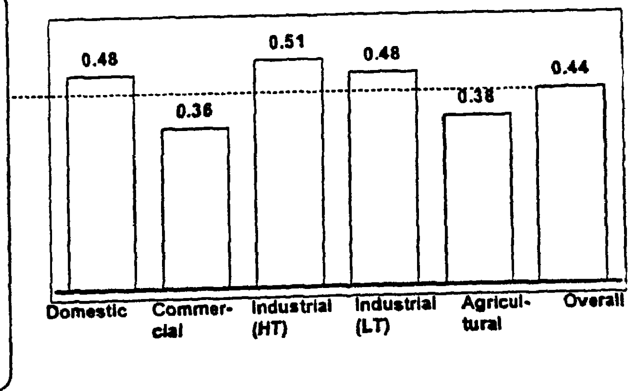
NPCL

Overall QUoPSI

CII – ORG MARG Study

Definition of QUoPSI

- QUoPSI is ratio of consumer's Satisfaction and the level of Expectation w.r.t present power situation
- Mathematical value of QUoPSI indicates level of satisfaction
- QUoPSI figures of this exercise would be used as yardstick for the periodic consumer surveys in electricity sector



CII Consumer Attitude Study

Electricity Regulation

➷ New Legislation

- ✓ ERC Act in 1998 introducing independent regulation at federal and State levels
- ✓ Ordinance in September 1998 constituting State Commission in U.P. having powers under the ERC Act
- ✓ U.P. Electricity Reforms Act made effective from January 2000 coinciding with Transfer Scheme and trifurcation of State Board
- ✓ Commission as licenser, licence enforcer, tariff setter, dispute resolver and guardian of consumer rights

New Rules

- ✓ Commission having powers of Civil Court in calling for records and books of accounts
- ✓ Tariff decisions to follow detailed proceedings and open hearings
- ✓ Onus on licensee to comply with timely submission of data and public disclosure norms
- ✓ Licensee responsible for transparent costs, standard procedures, service quality and performance reporting

New Principles

- ✓ Tariff determination from application of financial principles of Sixth Schedule under Electricity (Supply) Act, 1948
- ✓ Cost-plus formula, but with performance focus - only 'prudent' costs allowed, in contrast to expenditure 'properly incurred' under ESA
- ✓ No assured return without efficiency improvements - deviations from Sixth Schedule permissible if reasons are recorded

New Relationships

- ✓ Between bulk supplier and licensee in the determination of bulk supply rate
  - Economics, not ideology
  - Transparent process
  - No arbitrary claims
  - Public visibility
  - Community sensitisation

New Relationships (Contd.)

- ✓ Between licensee and consumer in the determination of retail tariffs
  - Independent decision
  - Open platform
  - Legitimate process
  - Links to service
  - Dispute resolution forum

Economics of Tariff

- Retail Tariff
  - ✓ Tariff escalations pronounced for consumers paying below cost of supply, linked to inflation in cost of power for others
  - ✓ Emerging pattern of tariff changes from cost of supply at different voltage levels
  - ✓ Onus on licensee to establish credible cost structure for allocating expenses, including overheads
    - ➢ Cost drivers - sales, network, consumers
    - ➢ Downstream cost of power - function of energy losses
    - ➢ Cost of supply - higher at lower voltages

ILLUSTRATIVE COST OF SUPPLY

Distribution of Costs *(Rs. mn.)*

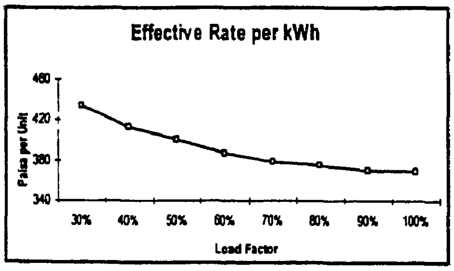
	33kV	11kV	LT	Total	Basis of Allocation
Repair & Maintenance Costs	0.74	1.20	11.68	13.62	Cost disaggregated as per contribution of network to energy sales under different voltages
Personnel Cost of Technical Staff	0.35	0.85	5.91	7.10	Network length as cost driver and apportioned as per contribution to energy sales under different voltages
Personnel Cost of Commercial Staff	0.05	0.10	1.05	1.20	Assessed as per consumer profile
Personnel Cost of Other Staff	1.90	1.90	1.90	5.70	Equal Distribution
Administration Cost	5.13	5.13	5.13	15.40	Equal Distribution
Bad Debts		0.40	1.40	1.80	At actual
Misc. Expenditure Written Off	0.30	0.09	0.21	0.60	Apportioned in the ratio of energy input
Interest & Finance Charges on L/C	3.00	0.90	2.10	6.00	Apportioned in the ratio of energy input
Interest on O.D.	0.57	0.57	0.57	1.70	Equal Distribution
Interest on Term Loan	0.57	0.55	2.68	3.80	Contribution of fixed assets to energy sales at different voltages
Depreciation	3.99	3.80	18.61	26.40	Contribution of fixed assets to energy sales at different voltages
Tax	1.50	0.40	0.00	1.90	Apportioned in the ratio of profit
Contingencies Reserve	0.17	0.16	0.78	1.10	Contribution of fixed assets to energy sales at different voltages
TOTAL FIXED COST	18.26	16.04	52.02	86.32	

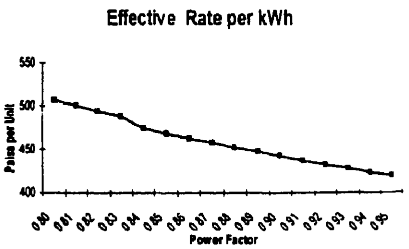
Unit Cost of Supply

Energy Sales (M.U.)	83.61	25.80	55.90	165.40	
Fixed Cost (Rs. Per Unit)	0.22	0.62	0.93	0.52	
Cost of Energy (Rs. Per Unit)	2.77	2.88	3.28	2.96	In proportion of energy losses
TOTAL COST (Rs. Per Unit)	2.99	3.50	4.21	3.48	

✎ Retail Tariff (Contd.)

- ✓ Bulk industrial rates reduced in U.P. - lower tariff against higher consumption and improvement of pf

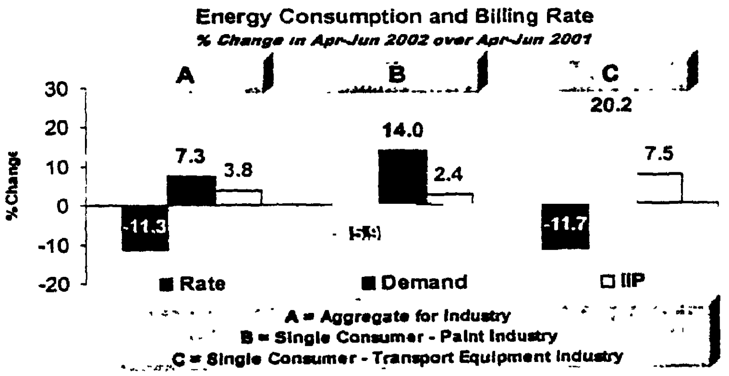




- ✓ Improvement in average power factor from 0.91 to 0.94 in NPCL area - 'WIN-WIN' situation

⇨ Retail Tariff (Contd.)

- ✓ Lower tariff contributing to higher demand



- ✓ Reversal of national trend of declining industrial sales

⇨ Bulk supply Rate

- ✓ Retail tariffs same across State - licensee's revenue subject to 'price cap'
- ✓ Bulk supply price determined as revenue *minus* permissible expenses and allowable profit - linked to earnings and also efficiency improvements
- ✓ Allowable costs determined as
  - ➢ R&M as % of opening balance of GFA
  - ➢ P&A linked to inflation, general price rise index
  - ➢ Depreciation, bad debts against valid documentation
  - ➢ Financing cost as per prudent WC limits

Bulk Supply Rate (Contd.)

- ✓ Approval of 'rate base' subject to
  - New investments backed by
    - ☐ cost-benefit analysis
    - ☐ productivity enhancement
    - ☐ funding arrangement
  - Baseline data
    - ☐ fixed asset records
    - ☐ on-going capex

Bulk Supply Rate (Contd.)

- ✓ Full return of 16% on rate base subject to efficiency gains
  - Reduction in energy loss
  - Improvement in collection
  - Enhancement of performance
    - ☐ service quality
    - ☐ outage / failure rate
    - ☐ voltage profile
    - ☐ metering / billing accuracy
    - ☐ dispatch of bills
    - ☐ release of new connections

Organizational Process

- New Paradigm
  - ✓ Regulator as "technician, political analyst / strategist, advocate, detective, prosecutor, judge, negotiator, educator and manager"

    - *Smith*
  - ✓ Holistic change of people, process & practices
    - **Environment management**
    - **Managerial competence**
    - **Performance & service orientation**
    - **Fact-based management**
    - **Application of law & economics**
    - **Practice documentation**

Drivers for Change

- ✓ **Threat of bankruptcy under regulation drives managerial incentives - boundary conditions of financial viability under 'price cap', regulated costs, fixed energy loss**
    - ➢ **Weak balance sheet limits financing options**
- ✓ **Forward estimates of demand, cost, investment plans - higher degree of automation for enhancing process capabilities**
    - ➢ **Engineering, billing & financial data**

Drivers for Change (Contd.)

- ✓ **Requirement of public disclosures - new mindset for sharing of information on business expenses**
    - ➢ **Transparent, credible documentation**
- ✓ **Condition of revocation of licence - clear accountability to meet service standards**
    - ➢ **Practice documentation & process measurements**

Performance Standards

– Electricity Services

Type of Service	*Time Limit for Response / Redressal*
Respond to consumer complaints	**Substantive reply within 10 days**
Restore supplies after fault	
Fuse Calls	**Within 2 hours**
Overhead faults	**Within 6-8 hours**
Underground faults	**Within 16-24 hours**
Transformer faults	**Within 24 hours**
Intimate interruption of supply	**At least 24 hours before**
Reconnect supply	**Same day of payment**

Performance Standards – Electricity Services (Contd..)

Type of Service	*Time Limit for Response / Redressal*
Investigate voltage / supply complaint	**Visit and reply in 7 days**
Attend meter problems	**Visit or reply in 3 working days** **Remedy within 2 days for industrial connections, 7 days for others**
Attend to billing query	**Substantive reply in 10 days**
Keep Appointments	**As per schedule**

Performance Standards

– New Connections

Type of Service	*Time Limit for Response / Redressal*
↳ Inspect for new supply and meter	Within 3 working days
↳ Estimate charges for connection	↳ Within 4 days for domestic/commercial ↳ Within 7 days for LT industrial ↳ Within 15 days for HT industrial
↳ Commence supply after payment	↳ Within 7 days for domestic/commercial ↳ Within 15 days for LT industrial ↳ Within 60 days subject to DOES clearance for HT industrial
↳ Commence billing	↳ Within 45 days for industrial ↳ Within 75 days for others

---

Performance Standards (Contd..)

↳ Overall Standards of Performance

	Details	*Minimum Target (%)*
❶	Restored in 2 hours following fault	*90*
	Restored in 24 hours following fault	*95*
❷	Voltage complaints corrected in 90 days	*95*
❸	Township consumers connected within 7 days	*95*
	LT Industries connected within 15 days	*95*
	HT Industries connected within 3 days after clearance	*95*
❹	Consumers reconnected on the day of payment	*95*
❺	Meters changed / shifted on request within 15 days	*95*
❻	Consumer letters replied within 10 days	*95*

Overall Standard

F.Y. 2001-2002

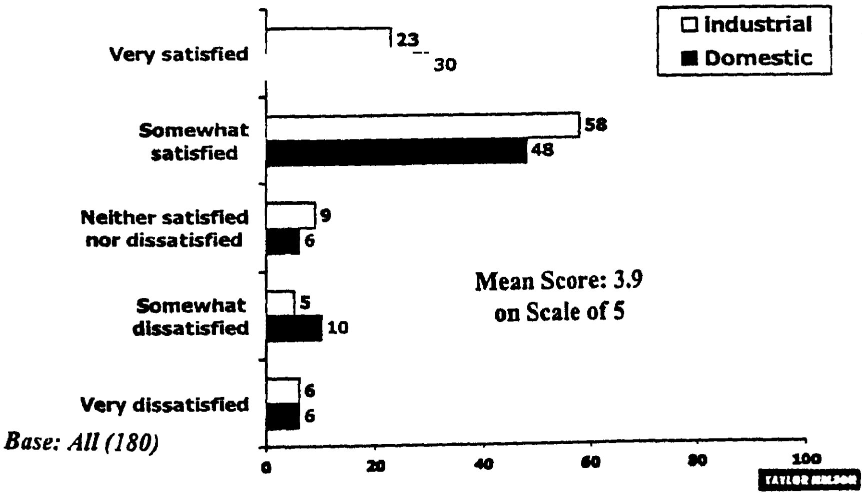
(%)

Sl. No.	Service Parameter	Minimum Target	Standard Achieved
1	% restored in 2 hours following fault	90	75
	% restored in 24 hours following fault	95	100
	Weighted Performance (Ratio - 4 : 1)	91	80
2	% of voltage problems corrected in 90 days	95	100
3	% of domestic / commercial consumers connected within 7 days after payment	95	80
	% of LT industries connected within 15 days after payment	95	96
	% of HT industries connected within 3 days after full clearance	95	100
	Weighted Performance for Industrial cases (Ratio - 4 : 1)	95	97
4	% of disconnected consumers reconnected within 24 hours of payment	95	100
5	% of meteres changed / shifted on consumer's request within 15 days	95	100
6	% of consumer's letters replied within 10 days	95	100

Average : 93%

NPCL

OVERALL SATISFACTION LEVEL



Mean Score: 3.9
on Scale of 5

Base: All (180)

➯ New Strategies

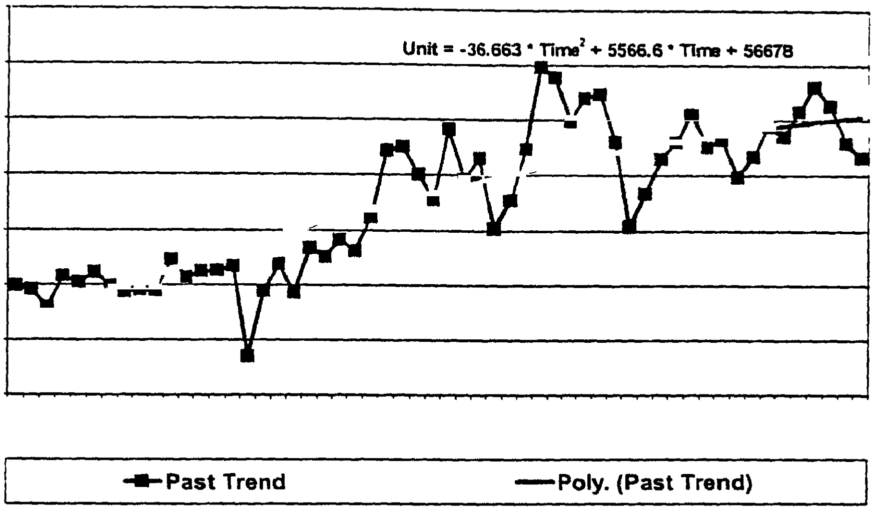
- ✓ **"Price regulation sets to mimic the pressures of a competitive marketplace"**

  - *Alexander & Mayer*

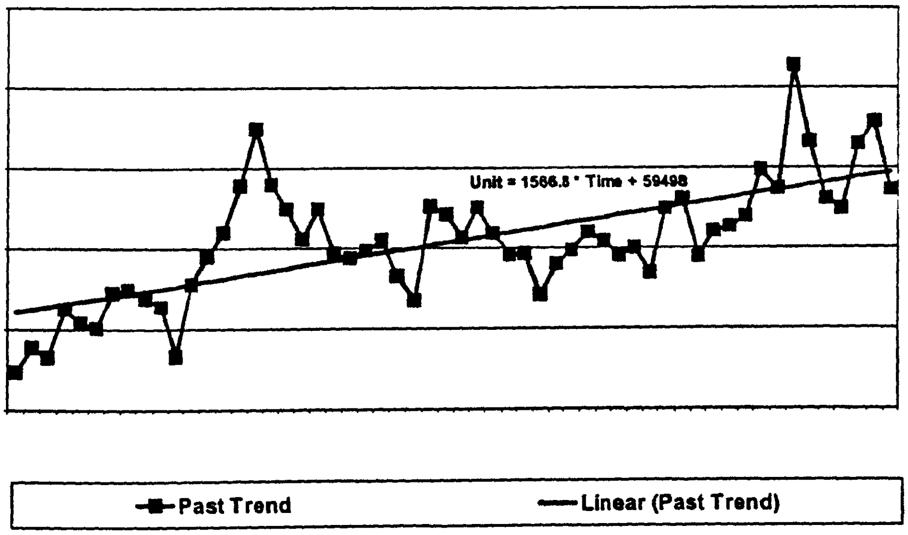
- ✓ **Initiatives to improve productivity, efficiency, costs and build competitive organisation - GIS, SCADA, RDBMS**

➯ New Skills

- ✓ **Enhanced processes require new employee capabilities - RDBMS, GIS and SCADA**
- ✓ **New competences to improve the quality and robustness of data**
  - ➢ **Regression analysis of demand estimates by extrapolating the past data employing multi-variate and Time Series models**


Unit = -36.663 * Time² + 5566.6 * Time + 56678
Past Trend
Poly. (Past Trend)

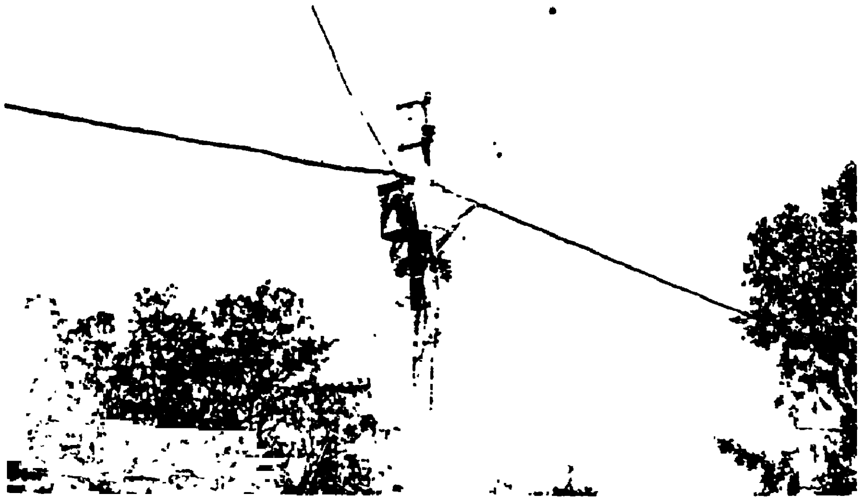
NPCL


Unit = 1566.8 * Time + 59498
Past Trend
Linear (Past Trend)

NPCL

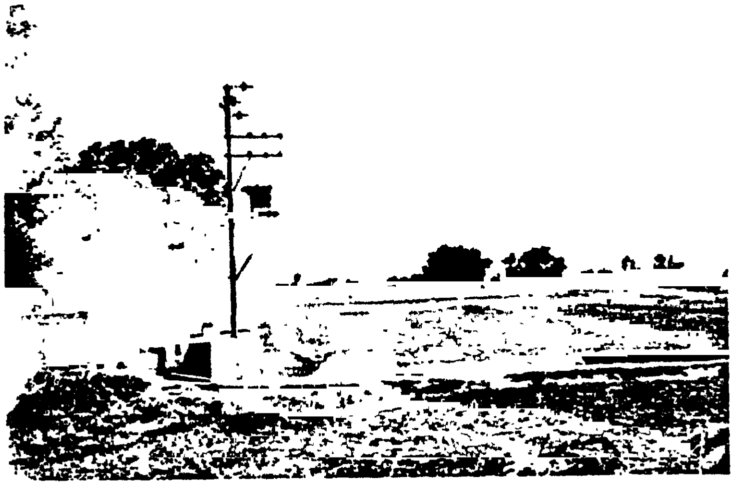
- **New Skills (Contd.)**
  - ✓ **Unleashing imagination is the key to improving productive efficiency**
  - ✓ **Innovations drive process and system improvements**
    - ➢ **On-line collection monitoring**
    - ➢ **Village metering**
    - ➢ **Modular supply for agricultural pumps**

Metering Scheme



Running LT Mains

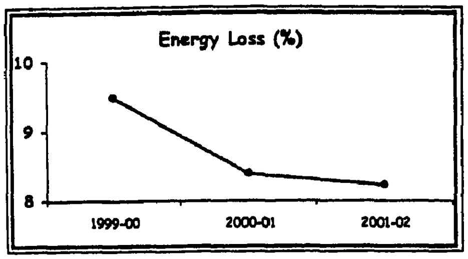
Modular Scheme

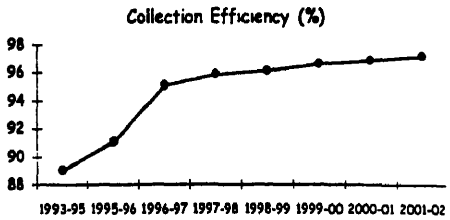


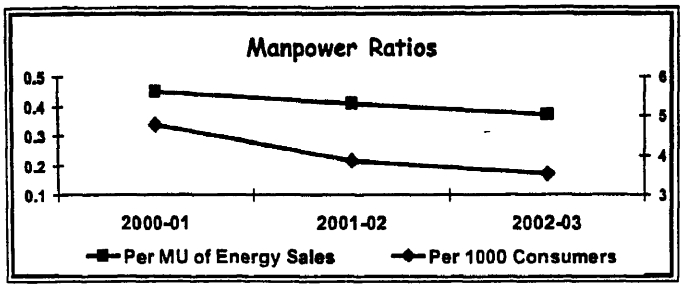
LT-less Distribution for Pumps

Goal Congruence

New Goals

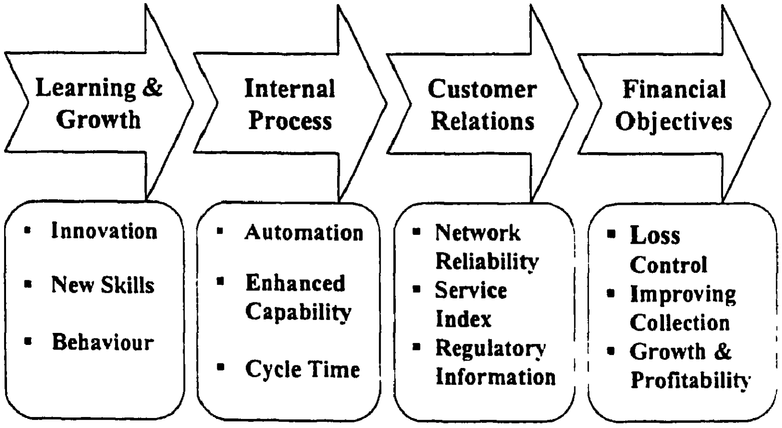






Strategy Implementation

✓ Built on people and process capability for meeting service quality, regulatory compliances and financial objectives



Learning & Growth

- Innovation
- New Skills
- Behaviour

Internal Process

- Automation
- Enhanced Capability
- Cycle Time

Customer Relations

- Network Reliability
- Service Index
- Regulatory Information

Financial Objectives

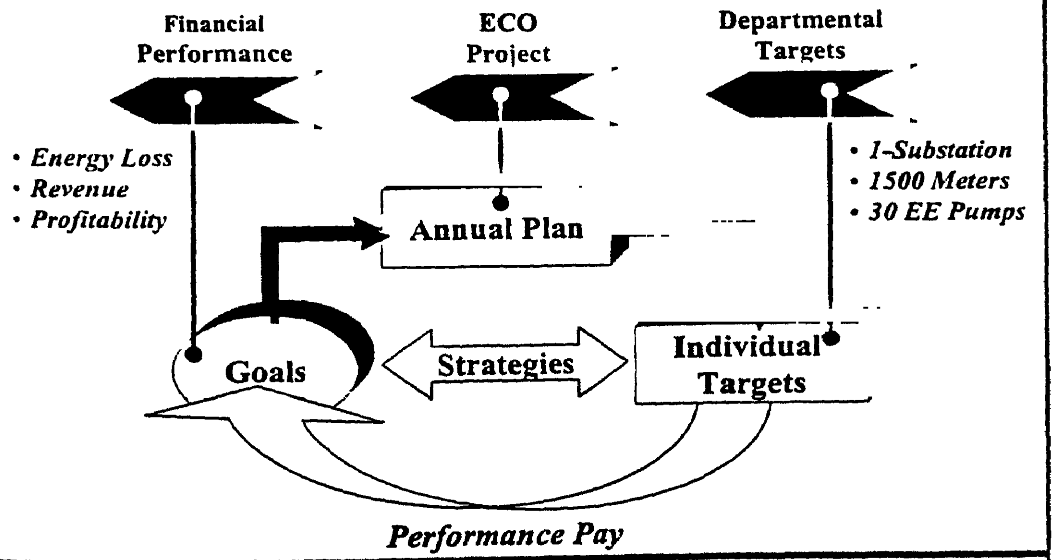
- Loss Control
- Improving Collection
- Growth & Profitability

Rewarding Performance

- ✓ Credible performance-linked remuneration leads to higher efficiencies in private infrastructure companies

  - Alexander & Mayer
- ✓ Foundation based on linking compensation to business success
- ✓ Annual increments based on Company-wide performance - PBT to meet targets after regulatory decision
- ✓ Second-tier arrangement under implementation - variable pay linked to individual targets

Strategy Chain



Organizational Climate

Area	**Average Rating (4-Point Scale)**
Anticipation, Speed and Flexibility	2.86
Customer Sovereignty	3.12
Innovation and Entrepreneurship	2.80
People Orientation	2.68
Passion for Superior Performance	2.71
Transparency and Integrity	2.88

Employee Satisfaction Index	**2.73**

Regulatory Reinforcement

Issues

- ✓ Curbing a natural monopoly not easy - differences of ideology govern relationships with private licensees
- ✓ Provision of Appeal in High Court open to abuse for lengthening the process - Appellate Tribunal as ADR
- ✓ Licensees not having the option of economic sourcing of power from market - consumers are losers
- ✓ Little enforcement of Grid Code – no practice of event reporting or advance information
- ✓ Regulatory lag creates uncertainties of costs, investments %weak case for raising finances if accounts are qualified

Complexities

- ✓ No baseline data to fix efficient levels of cost and productivity rate - utility business not on commercial lines, also private licensees have little commonality
- ✓ Econometric analysis cannot always capture local dynamics and individual firm behaviour - uncontrollable costs may not be identifiable or stable over time
- ✓ Licensee captive to business and social environment, affecting
    - ➢ Contract enforceability
    - ➢ Demand estimates
    - ➢ Revenue collection
    - ➢ Uncontrollable costs

- Solutions
  - ✓ Defining uncontrollable costs - legal expenses, performance pay which do not move with macro-economic indicators or follow yardstick comparison
  - ✓ Designing multi-year framework - allowing for future variances against exogenous factors and targeting progressive efficiency improvements
  - ✓ Capacity building for objective assessment of performance and cost levels - analysis of input-output ratios, performance and asset management audit, cost driver analysis
  - ✓ Supporting business innovations and new investments to improve productive efficiency - the ability of firm to produce at least cost

---

Thank You

Telecom Deregulation

Its Impact on Sector Development and Consumer Satisfaction

December 10th 2002

Rajat Kathuria
International Management Institute
New Delhi

The Seeds of Deregulation

- National Telecom Policy, 1994 objective, among others to build a world class telecom infrastructure
- Private participation permitted on grounds that investment needs in this sector are beyond the availability of public investment alone
- Since then private participation has taken place in some sector/segment of telecom services
- A new Telecom Policy (1999) announced
- It envisages introduction of competition in many service segments

MONOPOLY-Cause of Market Failure

A Monopoly wants to maximize profits. **It will want to charge** prices higher than needed to achieve:

- Efficient allocation of resources
- To meet demand
- To promote investment
- To meet social concerns

Therefore Regulation is necessary

The Philosophy of Price Controls

- Competitive markets that can provide services are likely to require no economic regulation other than what falls under the realm of competition policy

- When competition in the market is not possible and competition for the market results in a legal private monopoly, regulating price is one of the ways to address consumer interest

The Philosophy of Price Controls

- If the regulator had all necessary information, it could ensure an outcome close to effective competition
- Regulation is an example of a principal-agent problem. The regulator (the principal) wishes to induce the firm (the agent) to act in particular ways, but is hampered by insufficient information.

Objectives of Price Regulation

- Financing objectives
- Efficiency objectives; and
- Equity objectives

Issues to Consider

- Supply and demand
  - The functions of the tariff
  - Pricing strategies
- Approaches to pricing
  - Demand-based
  - Cost-based
  - Market-driven
- Tariff structures
- Tariff rebalancing

The Telecom Regulatory Authority Of India Act, 1997

Functions Of The Authority

- Notify rates at which telecommunication services shall be provided
- Regulate arrangement amongst service providers of sharing their revenue derived from providing telecommunication services
- Facilitate competition and promote efficiency

Issues to Consider

- Supply and demand
  - The functions of the tariff
  - Pricing strategies
- Approaches to pricing
  - Demand-based
  - Cost-based
  - Market-driven
- Tariff structures
- Tariff rebalancing

The Telecom Regulatory Authority Of India Act, 1997

Functions Of The Authority

- Notify rates at which telecommunication services shall be provided

- Regulate arrangement amongst service providers of sharing their revenue derived from providing telecommunication services

- Facilitate competition and promote efficiency

Functions Of The Authority (Contd.)

- Protect the interest of the consumers of telecommunications services
- Monitor the quality of service
- Settle disputes between service providers;
- Ensure effective compliance of universal service obligations

Functions Of The Authority Related To Interconnection

ACCORDING TO TRAI ACT, 1997

- ensure technical compatibility and effective inter-connection between different service providers;
- regulate arrangement amongst service providers of sharing their revenue derived from providing telecommunication services,

Functions Of The Authority Related To Interconnection (Contd.)

AS AMENDED BY TRAI (Amendment) ACT, 2000

- notwithstanding anything contained in the terms and conditions of the license granted before the commencement of the Telecom Regulatory Authority (Amendment) Ordinance,2000, fix the terms and conditions of inter-connectivity between the service providers;
- ensure technical compatibility and effective inter-connection between different service providers.
- regulate arrangement amongst service providers of sharing their revenue derived from providing telecommunication services;

Old Pricing Structure

- The old pricing structure was highly skewed
- High long distance and international call charges imply that a very small portion of the subscriber base accounts for a very large portion of call revenues.
- It is thus attractive for the new entrant to focus on the subscribers making long distance and international calls.
- Competition puts pressure on the cross-subsidy mechanism because new entrants focus on those subscribers who give high revenues.

Revenue Contribution By Different Subscriber Groups

Share of Total Subscribers	The Contribution of These Subscribers to Call Revenue
2.7 % (those making more than 10,000 call bi-monthly)	46.1 %
2.5 % (those making between 5001 and 10,000 call bi-monthly	9.8 %
7.9 % (those making between 2,001 and 5,000 calls bi-monthly)	13.4 %
14 % (those making between 1,001 and 2,000 calls bi-monthly)	11.6 %
21.3 % (those making between 501 and 1,000 calls bi-monthly)	10 %
51.7 % (those making 0 to 500 calls bi-monthly)	8.1 %

- This makes the incumbent operator very vulnerable to even a small loss in the subscriber base of the high caller category

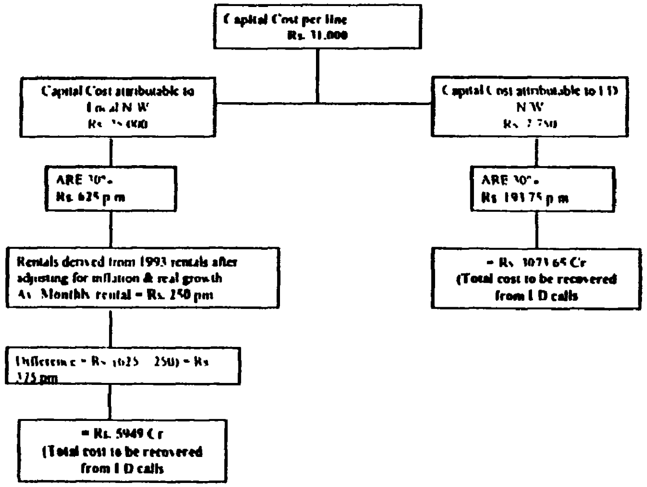
---

Nature Of The Distortion

Ratio Of Upper End Of Domestic Long Distance Charges And International Call Charges To Local Call Charge (Per Minute Charge For Three Minute Call)

Ratio of:	India	India	UK	Denmark	Sweden
	Present (1998)	Proposed			
Highest domestic long distance call charge to local call charge	90	45	10	14	15
Highest international call charge to local call charge	180	90	20	36	30

Derivation of Cost Based Tariffs



Capital Cost per line
Rs. 31,000

Capital Cost attributable to Local N W
Rs. 25,000

ARE 30%
Rs. 625 p.m

Rentals derived from 1993 rentals after adjusting for inflation & real growth
Av. Monthly rental = Rs. 250 pm

Difference = Rs. (625 – 250) = Rs 375 pm

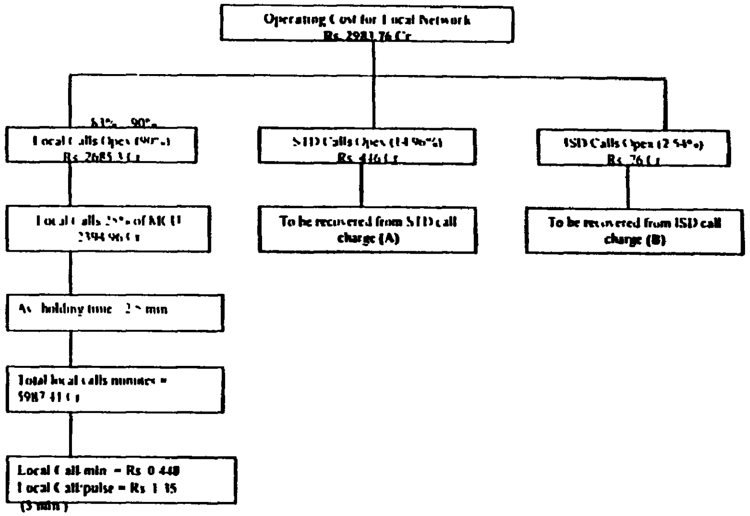
= Rs. 5949 Cr
(Total cost to be recovered from LD calls

Capital Cost attributable to LD N W
Rs. 7,750

ARE 30%
Rs 191.75 p.m

= Rs. 3073.65 Cr
(Total cost to be recovered from LD calls

Derivation of Cost Based Tariffs



Operating Cost for Local Network
Rs. 2983.76 Cr

83% – 90%
Local Calls Opex (90%)
Rs. 2685.3 Cr

Local Calls 25% of MCU
2394.96 Cr

Av. holding time 2.5 min

Total local calls minutes = 5987.41 Cr

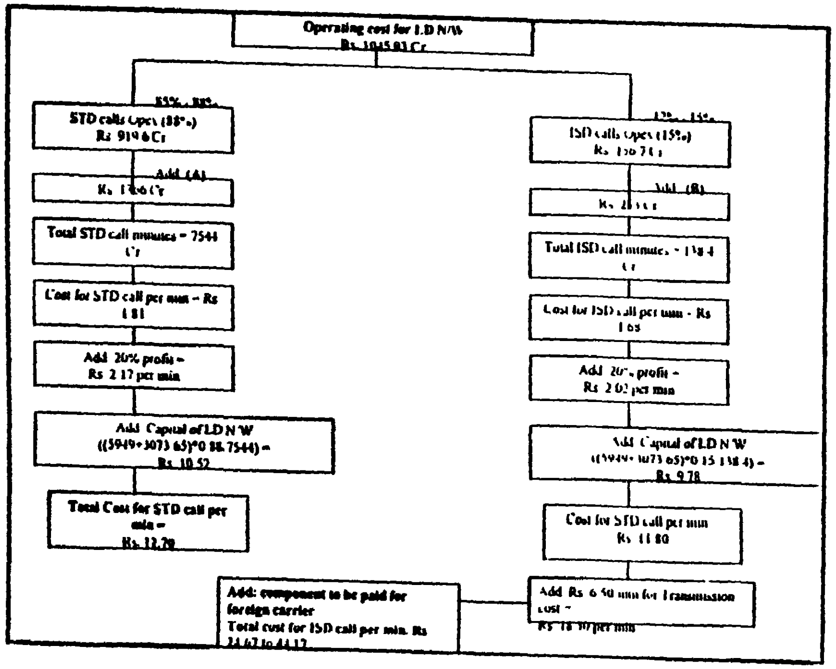
Local Call/min = Rs 0.448
Local Call/pulse = Rs 1.35
(3 min)

STD Calls Opex (14.96%)
Rs. 446 Cr

To be recovered from STD call charge (A)

ISD Calls Opex (2.54%)
Rs. 76 Cr

To be recovered from ISD call charge (B)



Operating cost for LD N/W Rs. 1045.93 Cr

85% - 88%

STD calls Opex (88%) Rs 919.6 Cr

Add (A)

Rs [illegible] Cr

Total STD call minutes = 7544 Cr

Cost for STD call per min - Rs 1.81

Add 20% profit = Rs 2.17 per min

Add Capital of LD N W ((5949+3073.65)*0.88/7544) = Rs. 10.52

Total Cost for STD call per min = Rs. 12.70

12% - 15%

ISD calls Opex (15%) Rs 156.7 Cr

Add (B)

Rs [illegible] Cr

Total ISD call minutes = 138.4 Cr

Cost for ISD call per min - Rs 1.65

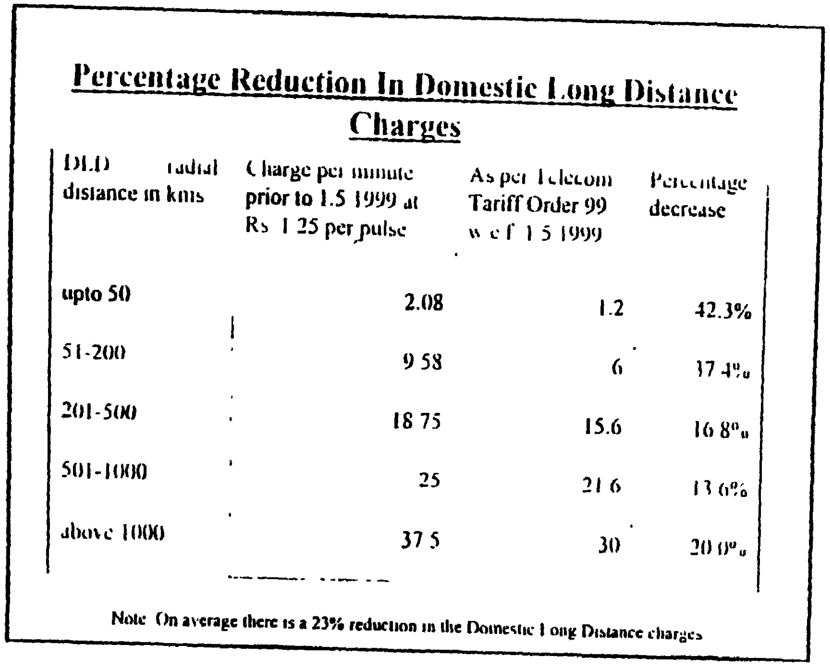
Add 20% profit - Rs 2.02 per min

Add Capital of LD N W ((5949+3073.65)*0.15/138.4) = Rs 9.78

Cost for STD call per min Rs 11.80

Add Rs 6.50 min for Transmission cost = Rs 18.30 per min

Add: component to be paid for foreign carrier
Total cost for ISD call per min. Rs 24.67 to 44.12



Percentage Reduction In Domestic Long Distance Charges

DLD radial distance in kms	Charge per minute prior to 1.5.1999 at Rs 1.25 per pulse	As per Telecom Tariff Order 99 w.e.f. 1.5.1999	Percentage decrease
upto 50	2.08	1.2	42.3%
51-200	9.58	6	37.4%
201-500	18.75	15.6	16.8%
501-1000	25	21.6	13.6%
above 1000	37.5	30	20.0%

Note: On average there is a 23% reduction in the Domestic Long Distance charges

Percentage Reduction In International Long Distance Charges

ILD Category	Charge per minute prior to 1.5.1999 at Rs 1.25 per pulse	As per Telecom Tariff Order 99 w.e.f. 1.5.1999	Percentage decrease
Slab I	37.5	30	20.0%
Slab II	62.5	49.2	21.3%
Slab III	75	61.2	18.4%

Cellular Mobile

Types of Classification	Existing	Proposed
Monthly Rental Cap	Rs 156	Rs. 600
Number of Time Categories Considered for Tariffs	Three (Standard, Peak, Off-peak)	Two (Peak, Off-peak)
Airtime	Rs 16.80/8.40/4.20 per minute	Rs. 6 per minute
Charging Scheme	Both outgoing and incoming calls to cellular are charged to subscribers	Both outgoing and incoming calls to cellular are charged to subscribers

After Three Years Of Regulation
Subscriber Base - Basic Services

Service Provider	Mar 98	Mar-99	Mar-00	Mar-01	Mar-02
BSNL	14,394,956	17,927,526	22,479,721	28,108,976	33,218,498
MTNL	3,406,740	3,653,913	4,031,624	4,327,158	4,629,709
Bharti	-	13,980	91,967	115,212	180,989
Hughes	-	6,070	22,110	69,599	160,512
Tata	-	-	26,713	58,736	150,400
Reliance	-	-	-	109	140
STL	-	-	-	8,998	27,150
HFCL	-	-	-	13,441	64,906
All India	17,801,696	21,601,489	26,652,135	32,702,229	38,432,304
Rate of growth (%)	-	21.35%	23.38%	22.70%	17.52%

After Three Years Of Regulation
Subscriber Base - Cellular Services

Category	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02
Circle "A"	176,954	354,799	585,653	1,165,778	2,134,333
Circle "B"	138,309	284,189	460,094	932,685	1,501,151
Circle "C"	15,296	36,915	42,633	116,040	227,573
Metro	551,757	519,543	795,931	1,362,592	2,567,757
All India	882,316	1,195,446	1,884,311	3,577,095	6,430,814
Rate of growth (%)	-	35%	58%	90%	80%

After Three Years Of Regulation

Cellular Subscribers As A Percentage Of Basic Subscribers

Category	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02
Cellular	882,316	1,195,446	1,884,311	3,577,095	6,430,814
Basic	17,801,696	21,601,489	26.652,135	32,702,229	38,432.304
Cellular / Basic (%)	4.96%	5.53%	7.07%	10.94%	16.73%

BASIC SERVICE

Estimate of Price change for different categories of subscribers (2000 – 2001) up to Sept. 2001

Service provider	Area of Operation	No. of Minutes					
		100	200	300	400	500	1000
HFCL (Rural)	Punjab	17%	13%	10%	7%	6%	3%
HFCL (Urban - low user)	Punjab	35%	25%	18%	15%	12%	6%
Tata teleservices	A P	0%	0%	0%	0%	0%	0%
Bharti Telenet Ltd	M P	0%	0%	0%	0%	0%	0%
Reliance	Gujarat	100%	53%	28%	18%	13%	5%
Hughes Tele Com	M H.	-7%	-7%	-5%	-4%	-6%	-3%
Shyam Telelink Ltd	Rajasthan	0%	0%	0%	0%	0%	0%

CELLULAR MOBILE SERVICE

Estimate of Price change for different categories of subscribers (1999 - 2001) up to Sept. 2001

Category	Service provider	Area of Operation	No. of Minutes								
			100	150	200	250	300	350	400	450	500
M	HMTL	Mumbai	-56%	-57%	-58%	-58%	-59%	-59%	-60%	-60%	-60%
M	UMTL	Calcutta	-54%	-57%	-59%	-60%	-60%	-61%	-61%	-62%	-62%
M	RPG	Chennai	-56%	-52%	-48%	-45%	-42%	-40%	-38%	-36%	-34%
M	Airtel	Delhi	-48%	-55%	-59%	-62%	-64%	-65%	-67%	-67%	-68%
A	Spice	Karnataka	-1%	-7%	-11%	-14%	-16%	-18%	-20%	-21%	-22%
A	Fascel	Gujarat	-23%	-29%	-32%	-35%	-37%	-38%	-39%	-40%	-41%
B	Spice	Punjab	-37%	-43%	-47%	-49%	-51%	-52%	-53%	-54%	-55%
B	ADL	U P (E)	75%	87%	96%	102%	107%	111%	115%	117%	120%
B	Escotel	Haryana	-7%	-8%	-8%	-9%	-9%	-9%	-10%	-10%	-10%
C	Bharti	H P	-33%	-34%	-35%	-36%	-36%	-37%	-37%	-37%	-38%

Structural Changes In The Telecom Sector

- Unlimited competition introduced in basic services
- Entry of fourth mobile operator
- Competition in NLD and ILD segments

NLD Service Providers

- BSNL
- Bharti Telesonic
- Reliance
- VSNL
- Connecting N/W Pvt. Ltd.

ILD Service Providers

- VSNL
- Reliance
- Bharti Telesonic
- Data access
- Pacific Netinvest
- Connecting network
- Satyam Infoway

Market For Access Services

- **Governed in** India by separate licenses
- Tariff regulation distinct for the two markets
- Is there Substitution?

Competition in the Market (Domestic)

Circle	No. of Access Providers
Andaman/Nicobar	3
Andhra Pradesh	7
Assam	3
Bihar	4
Chhattisgarh	1
Gujarat	7
Haryana	7
Himachal Pradesh	6
J&K	2
Jharkhand	1
Karnataka	8
Kerala	6
Madhya Pradesh	7

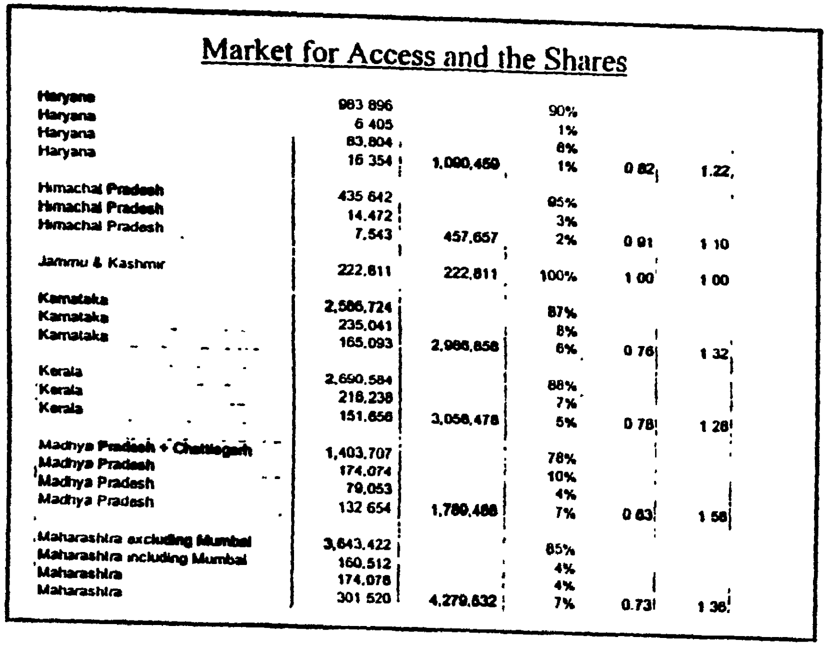
Competition in the Market (Domestic) - Contd.

Circle	No. of Access Providers
Maharashtra	7
North East	2
North East-II	3
Orissa	4
Punjab	7
Rajasthan	7
Tamil Nadu	8
Uttar Pradesh (East)	6
Uttar Pradesh(West)	5
Uttranchal	1
West Bengal	4
Calcutta	5
Chennai	5
Delhi	8
Mumbai	5

Market for Access and the Shares

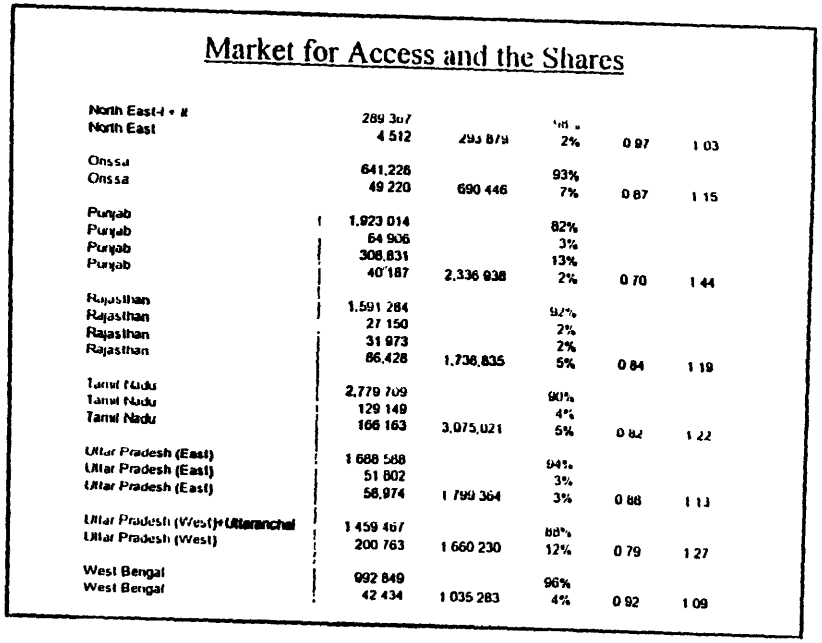
No. of Subscribers as on 31st March 2002

Service Area/State				HHI	1 / HHI
Andaman & Nicobar	33,034	33,034	100%	1.00	1
Andhra Pradesh	3,131,544		83%		
Andhra Pradesh	150,400		4%		
Andhra Pradesh	260,098		7%		
Andhra Pradesh	235,743	3,777,785	6%	0 70	1 43
Assam	420,942		94%		
Assam	28,711	449,653	6%	0 88	1 14
Bihar + Jharkhand	1,129,375		90%		
Bihar	115,059		9%		
Bihar	8,056	1,252,490	1%	0.82,	1.22
Gujarat	2,833,880		86%		
Gujarat	140		0%		



Market for Access and the Shares

Haryana	983 896		90%		
Haryana	6 405		1%		
Haryana	83,804		8%		
Haryana	16 354	1,090,459	1%	0 82	1.22
Himachal Pradesh	435 642		95%		
Himachal Pradesh	14.472		3%		
Himachal Pradesh	7,543	457,657	2%	0 91	1 10
Jammu & Kashmir	222,811	222,811	100%	1 00	1 00
Karnataka	2,586,724		87%		
Karnataka	235,041		8%		
Karnataka	165,093	2,986,858	6%	0 76	1 32
Kerala	2,690,584		88%		
Kerala	216,238		7%		
Kerala	151,656	3,058,478	5%	0 78	1 28
Madhya Pradesh + Chattisgarh	1,403,707		78%		
Madhya Pradesh	174,074		10%		
Madhya Pradesh	79,053		4%		
Madhya Pradesh	132 654	1,789,488	7%	0 63	1 58
Maharashtra excluding Mumbai	3,643,422		85%		
Maharashtra including Mumbai	160,512		4%		
Maharashtra	174,078		4%		
Maharashtra	301 520	4,279,532	7%	0.73	1 36



Market for Access and the Shares

North East-I + II	289 367		98%		
North East	4 512	293 879	2%	0 97	1 03
Orissa	641,226		93%		
Orissa	49 220	690 446	7%	0 87	1 15
Punjab	1,923 014		82%		
Punjab	64 906		3%		
Punjab	308,831		13%		
Punjab	40'187	2,336 938	2%	0 70	1 44
Rajasthan	1,591 284		92%		
Rajasthan	27 150		2%		
Rajasthan	31 973		2%		
Rajasthan	86,428	1,736,835	5%	0 84	1 19
Tamil Nadu	2,779 709		90%		
Tamil Nadu	129 149		4%		
Tamil Nadu	166 163	3,075,021	5%	0 82	1 22
Uttar Pradesh (East)	1 688 588		94%		
Uttar Pradesh (East)	51 802		3%		
Uttar Pradesh (East)	58,974	1 799 364	3%	0 88	1 13
Uttar Pradesh (West)+Uttaranchal	1 459 467		88%		
Uttar Pradesh (West)	200 763	1 660 230	12%	0 79	1 27
West Bengal	992 849		96%		
West Bengal	42 434	1 035 283	4%	0 92	1 09

Market for Access and the Shares

Mumbai	2,430 702		71%		
Mumbai	443,693		13%		
Mumbai	424,040		12%		
Mumbai	106,348	3,404,783	3%	0 54	1 84
Calcutta	1,312,532		83%		
Calcutta	102,660		7%		
Calcutta	154,188		10%		
Calcutta	8 915	1,578,295	1%	0 71	1 42
Chennai	1,024,901		80%		
Chennai	120,217		9%		
Chennai	140,020	1,285,138	11%	0 68	1 52
Delhi	510		0%		
Delhi	2,199,007		67%		
Delhi	582,837		18%		
Delhi	390,640		12%		
Delhi	94,199	3,267,193	3%	0 50	2 00

In Metros Cellular Share Increasing Rapidly

Faster Growth in Pre-paid Segment

Market for access likely to see more growth and competition especially since it is contestable with a surge expected in WLL (M)

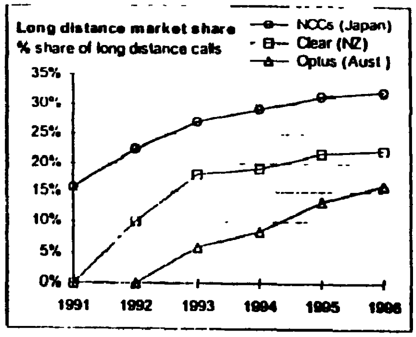
Evidence from other countries

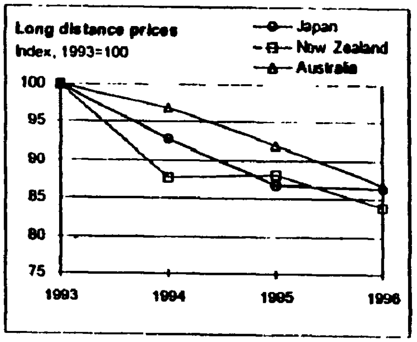
Typical evolution in monthly subscription charge

- Monthly fee kept well below cost
- Monthly fee includes free local calls plus rental of handset plus services
- Unbundling of monthly subscription
  - handset rental;
  - local calls
  - extra services, e.g., Directory inquiry
- [illegible] Split between residential and business subscriptions
- [illegible] Progressive rise towards costs

Typical evolution in local call charges

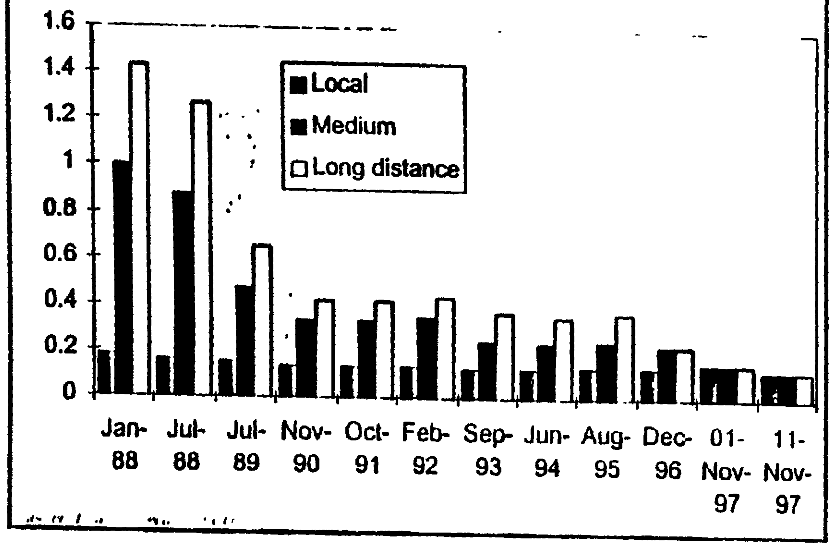
- "Free" local call charges included in monthly subscription
- Limited number of free calls included in subscription, others charged
- Local calls timed and metered
- Size of pulse unit shortens
- Size of local call zone shrinks



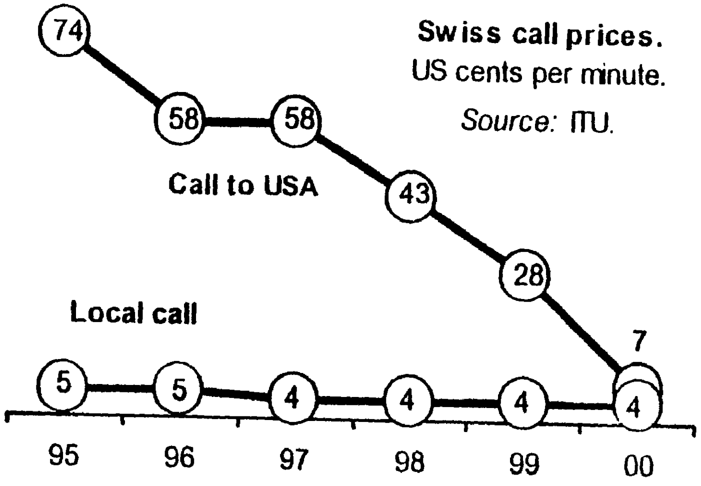


Source: ITU Asia-Pacific Telecommunication Indicators, 1997

Rebalancing in action (1):
Iceland Telecom, price of 3 minute, peak-rate call, includ. tax

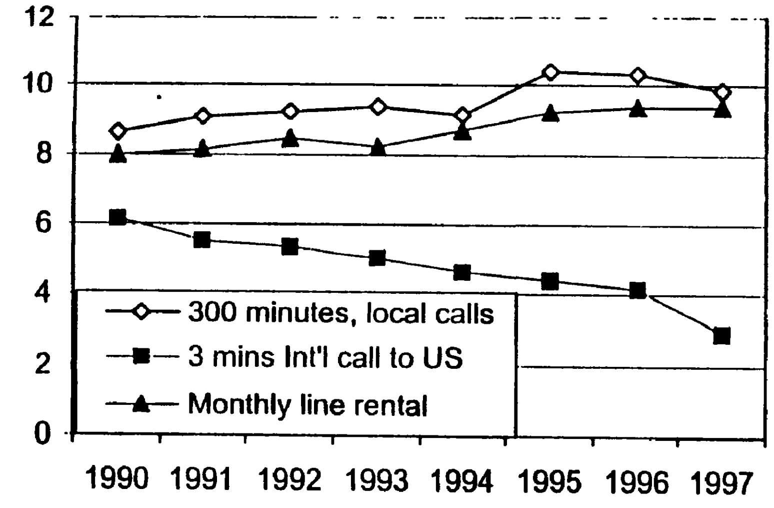


Rebalancing in action (2):
SwissCom, price per minute of local call and call to US

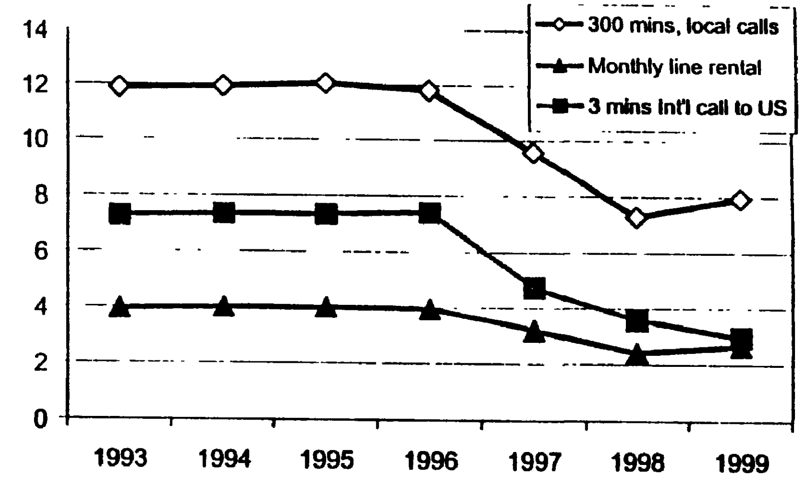


Swiss call prices.
US cents per minute.
Source: ITU.

Rebalancing in action (3):
Average trends in 39 major economies, in US$



Rebalancing in action (4):
Trends in Thailand, in US$

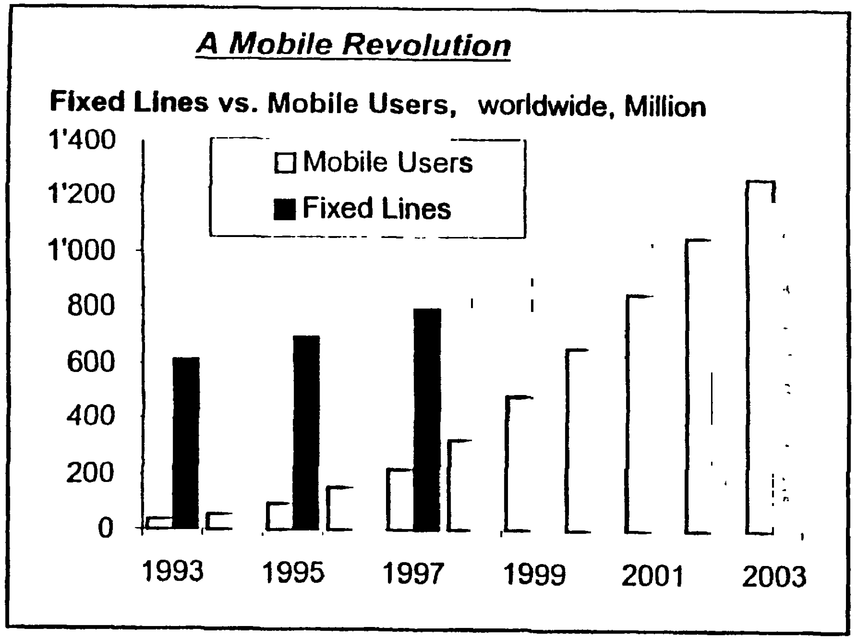


Evidence Suggests

- Introduction of competition requires fresh approach to tariff strategy
- Under monopoly, social-pricing or demand-based pricing was possible
- Under competition, pricing which is not cost-oriented will be rapidly undermined
- Market-driven pricing means understanding customer requirements
- Tariff rebalancing should be gradual, but the best time to start was yesterday

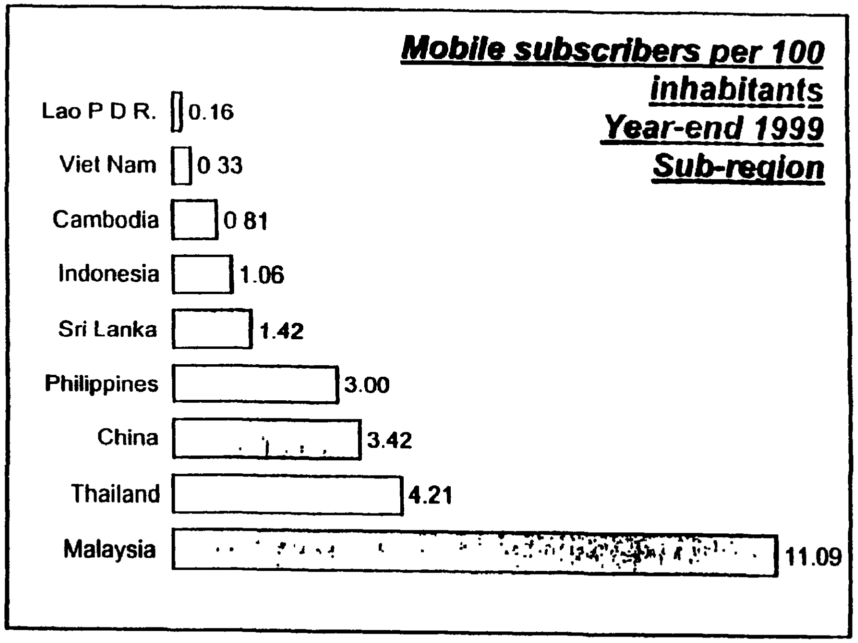
Pricing mobile services: Agenda

- **A Mobile Revolution**
  - ➢ Worldwide and in the sub-region
- **Pricing Mobile**
  - ➢ Options
  - ➢ Price comparisons and trends
  - ➢ Price trends
  - ➢ Average Revenue Per User (ARPU)
- **A Mobile Future**



A Mobile Revolution

Fixed Lines vs. Mobile Users, worldwide, Million

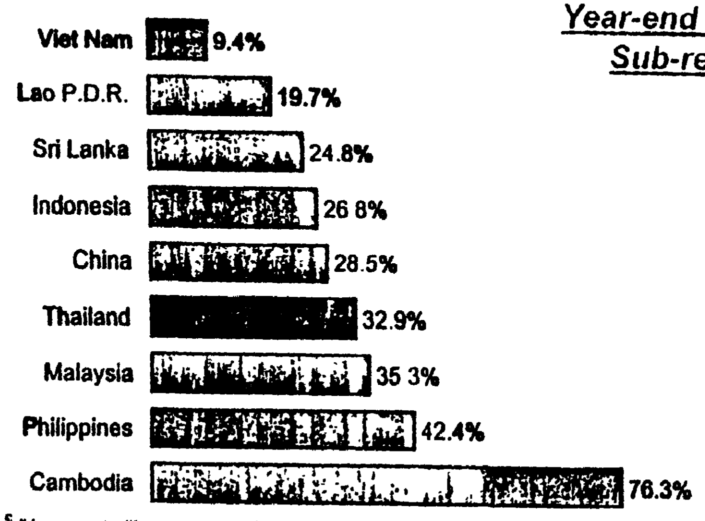


Mobile subscribers per 100 inhabitants Year-end 1999 Sub-region

Mobile subscribers as % of total telephone subscribers

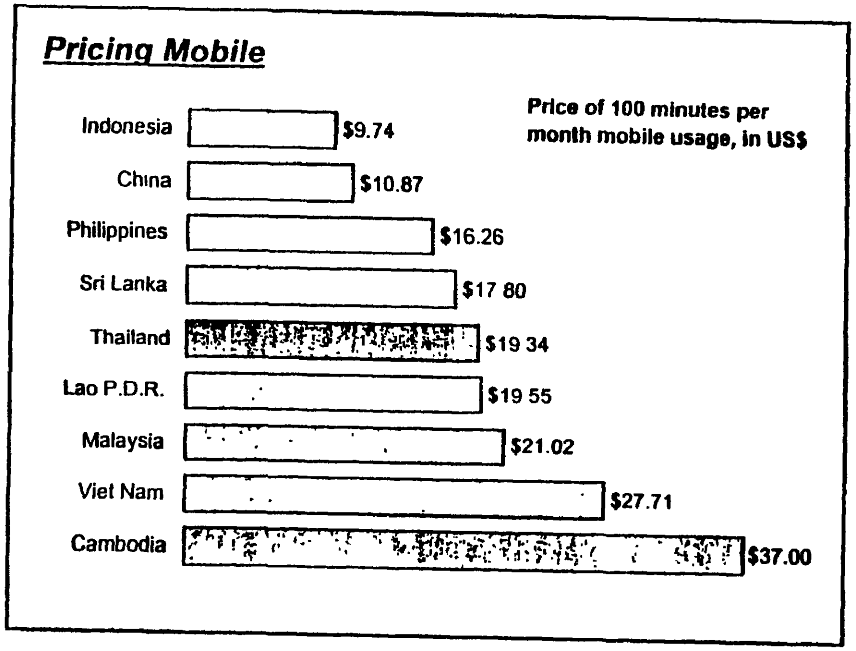
Year-end 1999

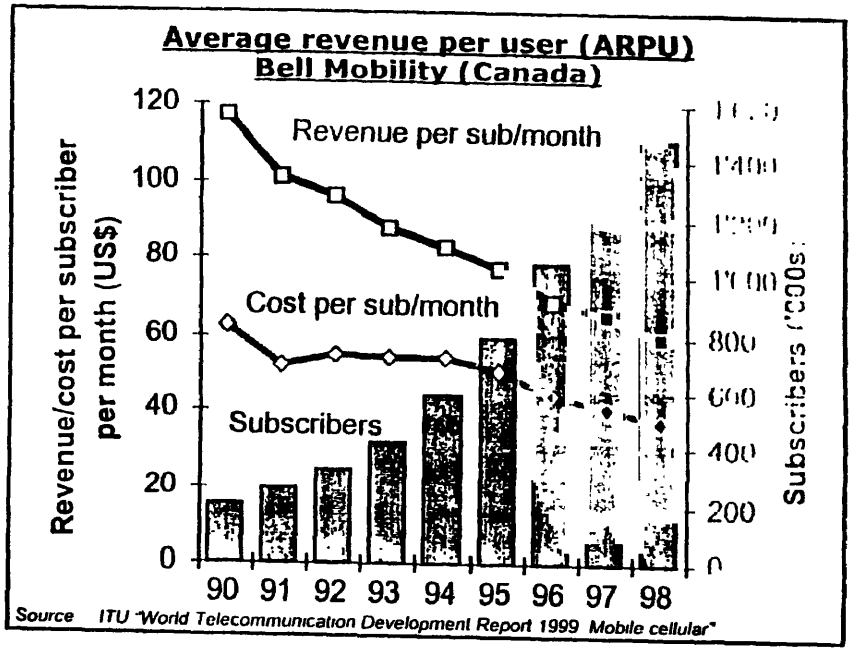
Sub-region



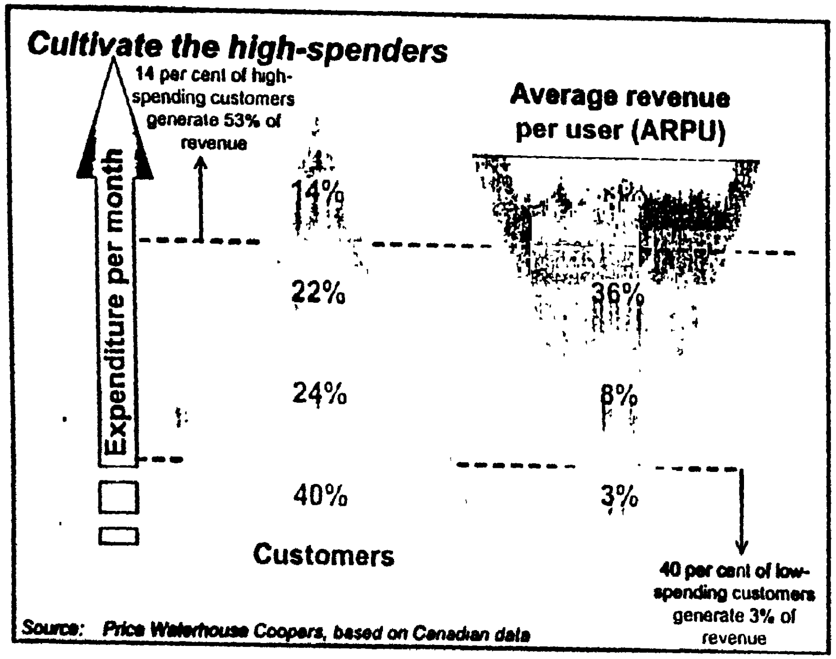
The secret of mobile success

- Why is mobile currently growing ten times faster (~55% p.a.) worldwide than fixed lines networks (~5.5% p.a.)?
- Why is the average mobile user much younger than the average fixed-line user?
- Why do users make calls using a mobilephone even when a fixed-line telephone is available and cheaper?
- What is the secret of the success of mobile?


Pricing Mobile


Average revenue per user (ARPU)
Bell Mobility (Canada)

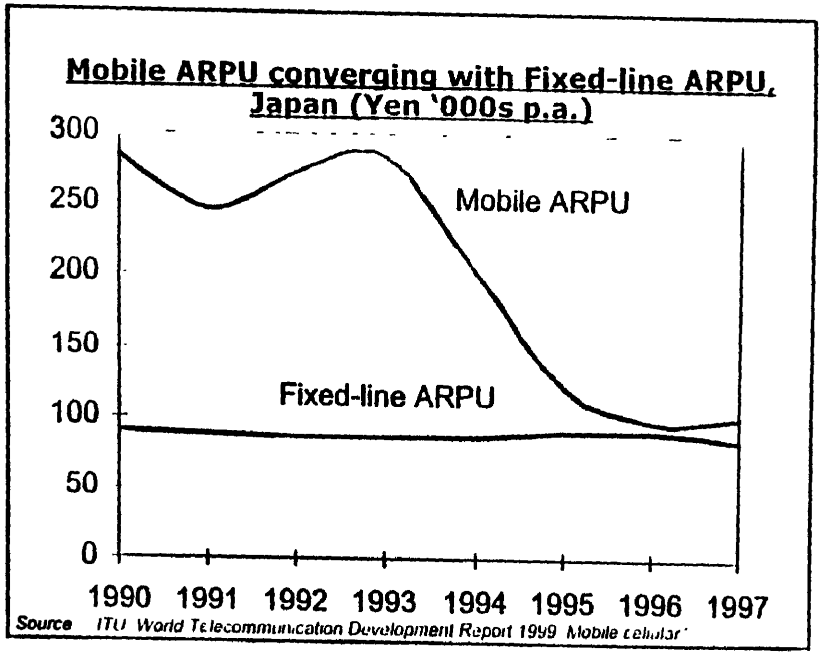
Source ITU "World Telecommunication Development Report 1999 Mobile cellular"



Cultivate the high-spenders

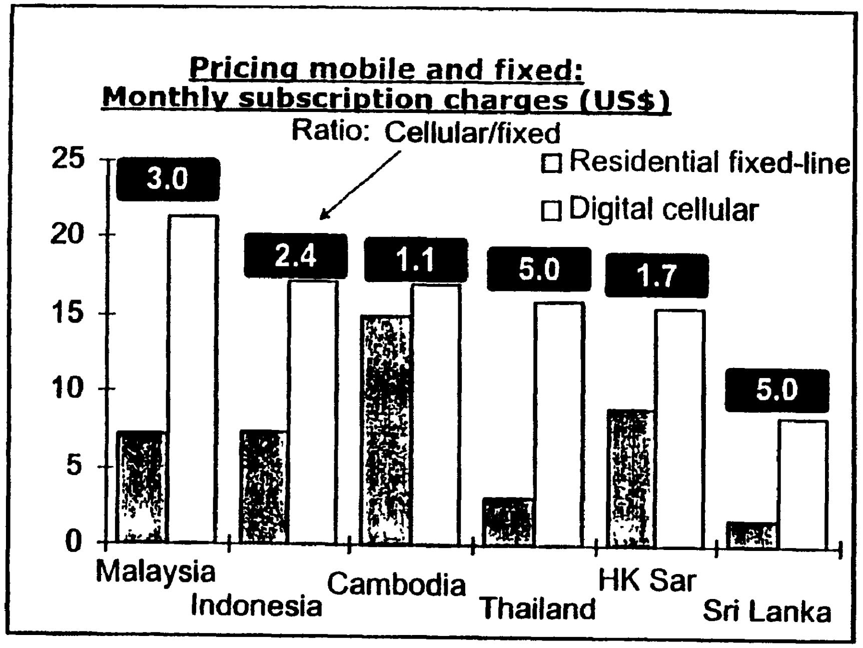
Expenditure per month
14 per cent of high-spending customers generate 53% of revenue
Average revenue per user (ARPU)
14%
22%
24%
40%
36%
8%
3%
Customers
40 per cent of low-spending customers generate 3% of revenue

Source: Price Waterhouse Coopers, based on Canadian data

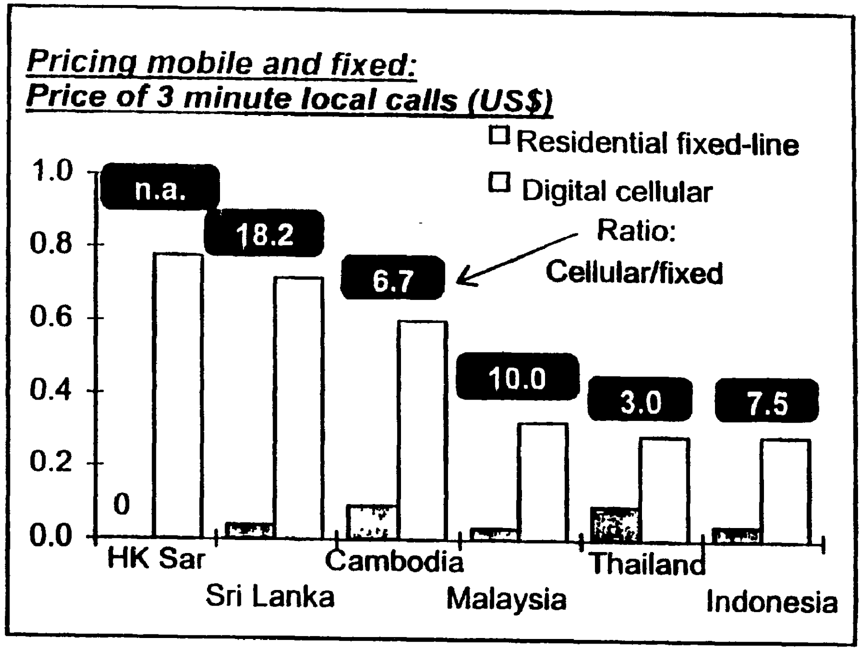


Mobile ARPU converging with Fixed-line ARPU, Japan (Yen '000s p.a.)

Source ITU World Telecommunication Development Report 1999 Mobile cellular

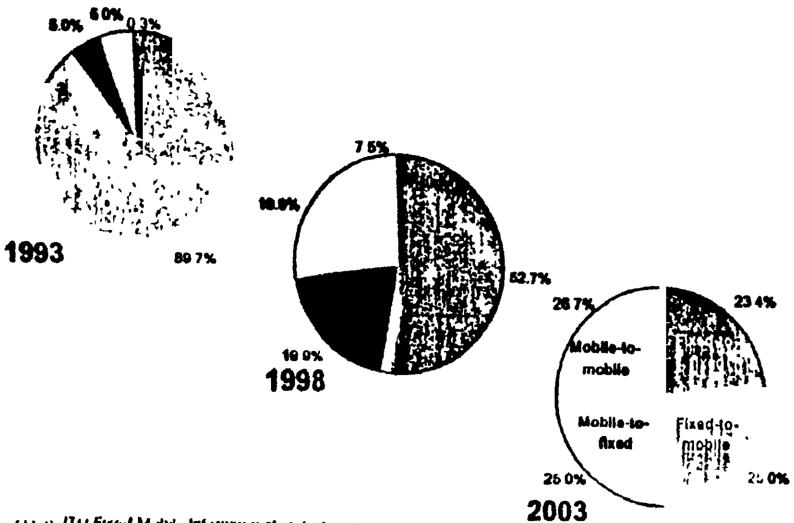


Pricing mobile and fixed:
Monthly subscription charges (US$)



Pricing mobile and fixed:
Price of 3 minute local calls (US$)

Calling opportunities worldwide



[illegible] ITU Fixed Mobile Interconnect website [illegible]

A mobile future

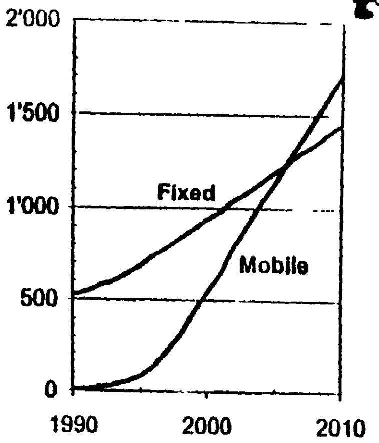
*Actual and **projected subscriber growth, fixed-lines and mobile, millions, 1990-2010***

Mobile has overtaken fixed-lines in Cambodia, Finland, Italy, Korea

Mobile subscribers to overtake fixed-line worldwide before 2005?

Mobile revenue to overtake fixed-line after 2004?

Fastest growth in developing countries



Thank you

Distributed Generation Option
Regulator's Role

K Ramanathan

Senior Fellow

TERI

Training program on "Infrastructure Deregulation"
9-13 December 2002

Outline

- What is distributed generation?
- Typical applications
- Drivers of Distributed Generation
- Regulatory approach
- Issues

What is Distributed Generation?

- Small/medium sized power plants
- Includes IC engines, biomass generation, mini/micros hydel plants, wind, solar, etc.
- Substantially lower capital outlay
- Shorter gestation period
- Location close to load centres
- Hybrid and non-hybrid systems

Typical Applications

- Overall load reduction
- Standby
- Combined heat and power
- Grid support
- Supply to remote villages, communication sites, etc
- May be independent or grid connected.

Drivers of Distributed Generation

- Accelerated electrification of all villages by 2007
- Siting difficulties for central generation and transmission facilities
- Unpredictable/modest growth in electricity demand
- Technological improvements (cost reduction)
- Green power (RE based systems)
- Aggressive vendors of DG systems

Regulatory Approach: Grid Connected DG

- Governed by CPP policies
- Regulators concerned with:
  - Permissible capacity
  - Third party sale
  - Tariff for sale
  - Wheeling and banking charges
  - Interconnection costs
- Approaches vary from state to state

RE Based CPPs - Policies

[illegible]		[illegible]	[illegible]		
Andhra Pradesh	Biomass & Wind	2% of energy	*For Biomass* 8-12 Months and for wind 12 Months	Rs 2.25/kwh (5% esc, 1994-95)	Not Allowed
[illegible]	Biomass	[illegible]			
	Wind	[illegible]			
	Biomass & Wind				
Madhya Pradesh	Biomass	2% of energy	For Biomass. Not allowed (no mention about wind)	Rs.2.25/kwh (no esc)	Allowed
Maharashtra	Biomass & Wind	[illegible] energy	12 Months	[illegible]	
[illegible]	Biomass & Wind	[illegible]	[illegible]		

Source : MNES Annual Report 2001-02

Regulatory Approach:
Non- grid Connected DG

- No specific policies in existence
- Electricity Bill 2001: GoI in consultation with SGs to notify national policy, permitting stand alone systems for rural areas
- Regulators should be concerned with
  - Quality of supply and service
  - Institutional sustainability
  - Price and affordability/willingness to pay

Issues

- Choice of distribution reform models
- Extent and nature of regulation
- Private sector participation
- Budgetary support from government
- Long term sustainability
- Development of a co-ordinated action plan for providing access to electricity to all in rural areas.

Thank you !

Infrastructure deregulation, Coal Sector – Issues and Challenges

S K Chand

In India, coal, rail and power, as far as coal-fired power plants are concerned, are interdependent on each other. One cannot even survive without the other. The reasons are obvious.

The IR (Indian Railways) until 1971 carried almost all coal produced in India except some by road and belt conveyors. With increasing number of power plants coming up at pitheads, MGR (merry go round, a system of circular rail owned by the utilities, mostly by NTPC) has taken over a large share of rail transport. Some coal also moves to the coastal power plants in south through ships wherein the mine to port distance is again covered by rail. Even with such shift in transportation, IR still carried about 53% of coal in year 2001. The revenue earned by IR by transporting coal is the highest among all revenue traffic and accounts for about 48%.

In 2001-02, domestic coal production touched 328 MT. Out of this, about 242 MT (74%) was consumed by the utilities alone, and not to talk of the coal-fired captive plants, which, according to an estimate, consumed additional 25 MT.

In India, there are over 70 coal-fired power plants of various capacities in state, central and private sector with a total capacity of over 62,631 MW (60%) out of a gross capacity 105834 MW. The percentage of electricity produced by burning coal to the total electricity produced is also of the order of 59%.

However, the pace of reforms in these sectors has not been uniform and has resulted in certain incongruities.

Deregulation in power sector

The process of reforms started in 1991-92 and both power and coal sector embarked on a road to deregulate themselves. Much has happened in the power sector in the past few years and would continue to happen. The sector has started a process of unbundling wherein the generation, transmission and distribution has been separated from each other in many states, and others are following. Private participation in generation and distribution has been allowed, though the process is having some problems. It is hoped that this would be sorted out in near future. Independent regulators at the center as well as in many states are in position who have taken over the regulation of the sector and the ministry is no more involved in the day to day operation of the sector. This process has provided, more or less open and transparent tariff setting for the power sector, trying to provide a level playing field for every one involved.

Reforms in Coal Sector

The liberalization in coal sector officially started in 1992 but its pace was slow until 1995-96 when the price of superior grades of non-coking coal and all coking coal was decontrolled. This followed by the decontrol of prices of hard coke, soft coke and grade D in March 1997. The price of lower grades of non-coking coal was decontrolled with effect from 01.01.2001 when the Colliery Control Order 1945 was replaced by Colliery Control Order 2001, which supposedly was also to remove the distribution control as well.

Decontrolling prices in a monopoly resulted in immediate rise in basic price of coal, which was hitherto increased periodically on BICP (Bureau of industrial costs and prices) formula based on normative costs with a rider for the industry to improve efficiency of men, machine and capital employed.

CMNA (Coal Mines (Nationalization) Act 1973), which gave exclusive rights to Central Government and Government controlled public sector companies to mine coal also included captive mining by private parties engaged in production of iron and steel. Grant of sub-leasing to private operators was also allowed only for isolated small deposits not amenable to economic development by national companies and not requiring rail transport (or in other words where there was no rail infrastructure present or if present, the private operator could not claim its use).

CMNA was amended in June 1993 by a Gazette notification to include captive mining by private parties for power generation and washing of coal for captive use. This was necessitated because the demand-supply projection for future years was shown to have a large gap, which needed to be bridged for which private participation was sought as the budgetary support by the government was removed and national companies were not generating enough surplus for new capacity building. The second amendment by another Gazette notification came in March 1996 to include mining for captive use in cement manufacture, again because the national coal industry was not in a position to supply the coal of desired grade to the industry.

These amendments were made applicable to public sector companies as well. However, the restriction of captive mining was not applicable to coal companies controlled by the State. It was also not applicable to State Mineral Development Corporations.

Equity participation by foreign investors in Indian companies was allowed the extent to be decided by CCFI (Cabinet Committee on Foreign Investment) on case-to-case basis. Requirement of industrial license under Industrial Development & Regulation Act 1951 was also abolished.

For facilitating the private mining, coal blocks were offered by the Ministry of Coal in 1999 to prospective private operators. Initially 82 green-field mining blocks with an estimated reserve of 10 billion tonne and capable of producing 150 million tonne annually was identified as reported by MOC. Out of these, it was reported that 23 blocks have been allotted to power sector, four to steel sector and 12 more blocks were under consideration for allocation. Only 43 blocks were left for the willing to grab. Many more coal blocks were offered in later years but takers were few.

After more than three years of the offer, the current picture is quite different. Only three private companies have started producing coal for their captive use. Bengal -EMTA, a joint venture effort of government of West Bengal started operating in Tara block for captive use in its power plants. CESC has recently started producing coal from Sarasthali block for Budge-Budge plant. Jindals have started mining for their sponge iron plant and gassifiers from Gare-Plma coal block of Chhatisgarh. The combined annual production of these private mines is estimated to be not more than 4 million tonne in the current year.

In view of the failure of the captive mining, it was essential that CMNA must be further amended to allow the private companies to mine coal and lignite without the existing restriction of captive mining. Accordingly, The Coal Mines (Nationalization) Amendment Bill 2000 was drafted. The bill also reportedly includes a provision for an independent regulator for coal sector with specific mention of "for allotment of coal blocks to private investor". The bill has been languishing for several years now without being passed. It was expected to be introduced in the monsoon session of Parliament in July 2001. The pending bill could not be introduced in the winter session of Parliament due to threat of strike by the coalmine workers' unions but it was reported that government was keen to introduce it in the monsoon session 2002. However, another threat of strike forestalled it again. Briefly, reforms in coal sector started from the wrong end.

Reforms in Indian Railways !

The railways are operated as a monopoly Government organization. Their operation is governed by the Railways Act 1989. The Act appears to be strongly biased in favour of the railways while largely ignoring the needs of the consumers. The possibility of reforms in IR seems remote notwithstanding the recommendation of corporatization of IR by Rakesh Mohan report.

The rail transportation sector faces many challenges such as lack of capital, imbalances in capacity and equipment utilization, and non-payment from customers. Some freight rate liberalization has enabled the railways to partially address these needs, but price liberalization in the rail sector has been very limited to date. Under current policies, the railway tariff is predetermined and is the same for all commodities assigned to a given class. It is noted that the current freight tariffs reflect the requirement that the railways subsidize passenger and other freight traffic.

The consequences

The three sectors cannot be considered in isolation due to their strong interdependence. While the power sector is reformed progressively; the lack of a matching reform in the other two sectors has an overall dragging or negative effect on the process.

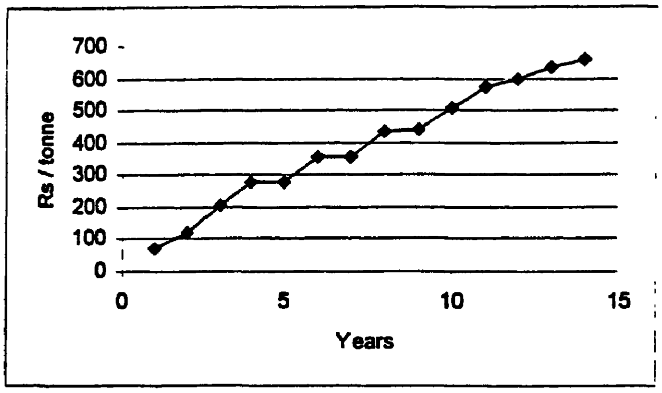
Section 23(2) of Electricity Regulation Commission Act 1998 states that the tariff fixed by the State Electricity Regulatory Commission (SERC) will progressively reflect the cost of supply of electricity at an adequate and improving level of efficiency. The tariff will include factors, which would encourage efficiency, economical use of the resources, good performance, optimum investments, and other matters, which SERC considers appropriate for the purpose of this Act. The interests of the consumers are safeguarded and at the same time, the consumers pay for the use of electricity in a reasonable manner based on the average costs of supply of energy and the electricity generation, transmission, distribution and supply are conducted on commercial principles.

This clearly puts an onus on the Electricity Regulator to examine, among other parameters, the cost of fuel reported by the generator. The regulatory commissions are yet to address the issue of fuel costs in its entirety.
In those states where unbundling has taken place such as Orissa, SERC is of the opinion that purchase of power by distribution companies should be strictly based on merit order thus obviating the need for the Commission to look into cost of generation. This indirectly means accepting the cost of fuel as submitted by the operator, efficient or otherwise.

If we consider the delivered fuel cost at the plant gate, which is the largest component in the electricity tariff that the consumers have to pay, the problem becomes clear. The delivered cost of coal at the power plant has mainly three components namely the basic price, taxes and duties and the transportation cost.

The basic coal price

The basic price, which stands decontrolled today, relates to the efficiency of coal production from various mines of the national coal companies. Because of the decontrol the coal price went northwards and continues to do so, unbridled.



Year	Rs/ tonne
1974/75	70
1979/80	119
1989/90	279
1999/00	656

Figure 1 Average pithead price of coal (Rs/tonne)

The cost of production, which in turn is related to coal price, encompasses the efficient use of man, machine and capital involved. The efficiency on men and machine has been very low and is nowhere near the international standards. Though BICP in its submission for price increase to the government, every time suggested that the price increase be granted only if the industry makes efforts for increasing efficiency thus cutting costs, the industry got the increase but failed to improve.

The basic price also relates to the quantity and quality of coal, its grade and related heat value. It is well established that the coal quality as received by the power plants are at least one or two grades lower than what it is billed for. It is also accepted that the shortages in transit are more than 5% for which the IR does not accept any responsibility and hence the power utility pays for the coal it did not receive.

Removing control of distribution of coal was irrelevant, as the consumers of coal had no choice. There was only one coal supplier. The linkage committee is still in operation, though legally it has lost its relevance. It is also observed that some power stations are being supplied coal from a large number of collieries. For example, coal for Badarpur is loaded from25 points in two companies (13 from BCCL and 12 from CCL), MSEB and GEB plants get coal from 46 and 40 loading points respectively. In the process, many of the linkages may be high cost and irrational. This results in quality variations of coal supplies affecting the performance of the power plant, which in turn result in higher cost of generation. This also results in large variations in the delivered cost of coal at the power station. This issue was addressed in the 'Fazal Committee' report (1983) and the

Committee had recommended that the number of mines supplying coal should preferably be restricted to three or four collieries but not to exceed ten in any case. However, this has not happened yet.

Transport cost

The role of rail transportation is predominant in moving coal and the consumer is bearing the burden of high freight charges that are being increased year after year when internationally rail transportation rates are falling. Indian coal freight rates show substantial annual increases over the last six years in current terms and even in constant terms having risen over 20%. The average realization of freight from coal/tonne km is higher then the average cost of all other goods transported on tonne km basis. (Figure 2)

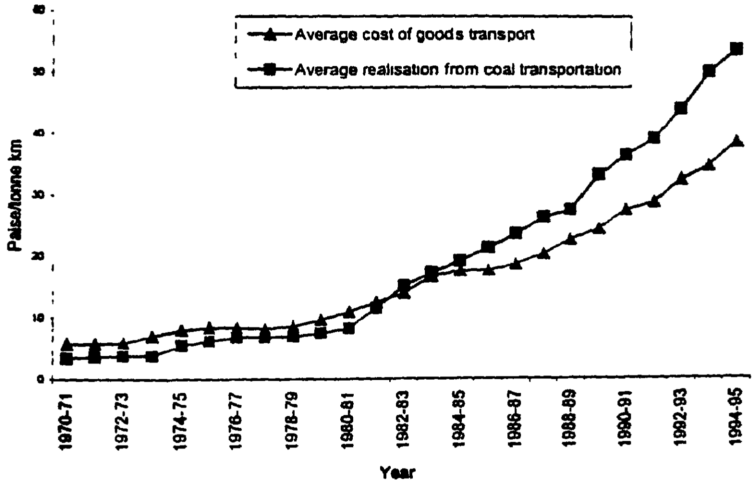


Figure 2 Average realization of coal transportation against average cost of goods

Apart from the regular annual increase in the freight rates through the Railway budget, the increase in freight is sometimes effected through the change in the commodity code of coal. This practice is generally adopted to circumvent the normal route of freight increase through annual budget and its placement for approval in the Parliament. Railway freight and fare committee has also advised IR not to adopt this policy because it distorts the given structure of freight[1].

Telescopic effect in freight

Reduction in the telescopic effect in freight has caused comparatively higher cost of delivered coal to long distance users. It is noted that the freight rate structure in India on a per tonne-km basis decreases only marginally with distances over 600 km. The rail freight for coal transportation over different distance slabs for selected years is given in Figure 3.

---

[1] Railway Freight & Fare Committee Report para 8.17.2

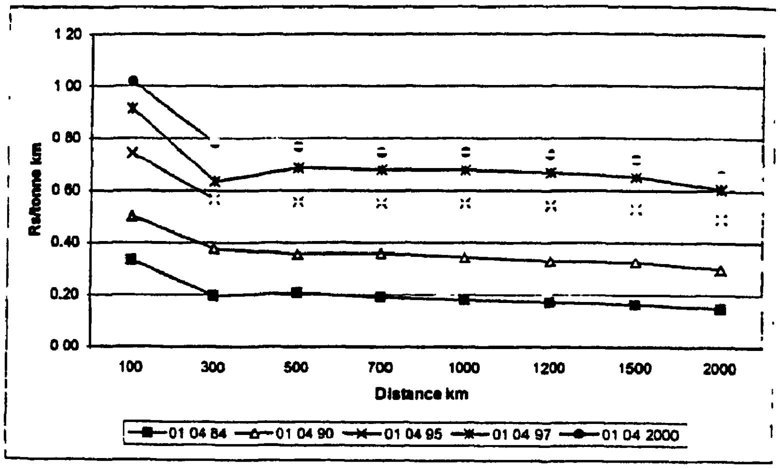


Figure 3 Rail freight for coal transport (Rupees per tonne km)

It is clear from the above graph that

- The freight charge for shorter distance up to 300 km is the highest. This is anomalous because the turn around for the wagons and engines are much smaller compared to long distance, especially when the free loading and unloading time has been drastically reduced. The wagons and engines run almost like captive system and can give higher returns for the IR. There is a sharper fall in this range noticed during the year 1997 indicating that IR has passed on a part of this benefit to consumers situated at this distance slab.
- There was a fall in freight between 300 to 500 km for initial years but in 1997, this has been reversed and the freight has increased.
- The average lead of coal has been hovering around 700 km and the freight has been all along kept flat for the distance slab of 500 to 1000 km except for a fall in the initial years. In fact, this is flat even up to 1500 km for the year 1997 and then there is a decline. This decline was much marked and started from 700 km in the year 1984 signifying some advantages that the IR granted to the distant consumers.
- A large number of load-center thermal power plants are situated within the distance slab of 500 to 1500 km and these stations do not get the benefit of telescopic advantages.
- Granting telescopic advantage to consumers beyond 1500 km does not help the utilities, since most of the power stations are within 1500 kilometer from the source.

In India, the cost of transportation of coal in terms of Rs / tonne keeps on increasing as the distance from the source increases, though the rate of increase changes for different slabs. The slope of the curve has been getting sharper over the years signifying sharper increased in freight charges. The freight rates for 1500 km has been almost doubling every 5 years initially but the increase has been less in the recent past. This is clearly seen from the figure 4.

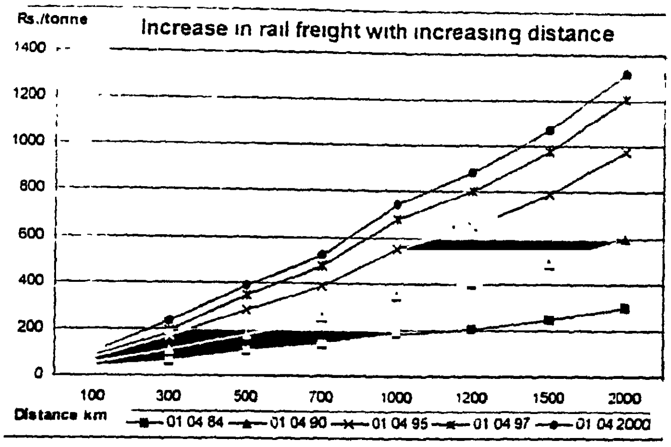


Figure 4 Rail freight for coal transport (rupees/tonne)

This is in stark contrast to US rail freight rates in $ per tonne for coal which continue to decrease sharply as the distance increases. At 1500 km, it is the same as that at 700 km it is even lower than that at 1000 km. This reduction in rate with longer distances is logical as the fixed costs are spread over a greater number of tonne/km. Figure 2.4 shows the comparison of freight costs over a distance of 0 - 2000 km for India and USA in $ per tonne. Since the rates in US are contracted by various consumers with the railroad companies in $ per short ton, and in India it is in Rs per tonne, both have been converted to $ per tonne and a trend line fitted. While in the US rates, trend show a convex curve over the 0-2000 km range signifying lower cost for longer distance, Indian rate trend curve is a constantly rising straight line signifying ever increasing cost with distance.

The trend of tariff being lower for longer distance compared to shorter or medium distances may sound anomalous in Indian context. This is possible only when consumers have a choice for selection of transporter and capacity of transportation available is in plenty. IR being a monopoly, and always short of capacity, this choice is not available to Indian consumers yet. Nevertheless, distant bulk consumers do deserve some relief if use of indigenous coal has to be encouraged and IR has to hold its share in coal transportation.

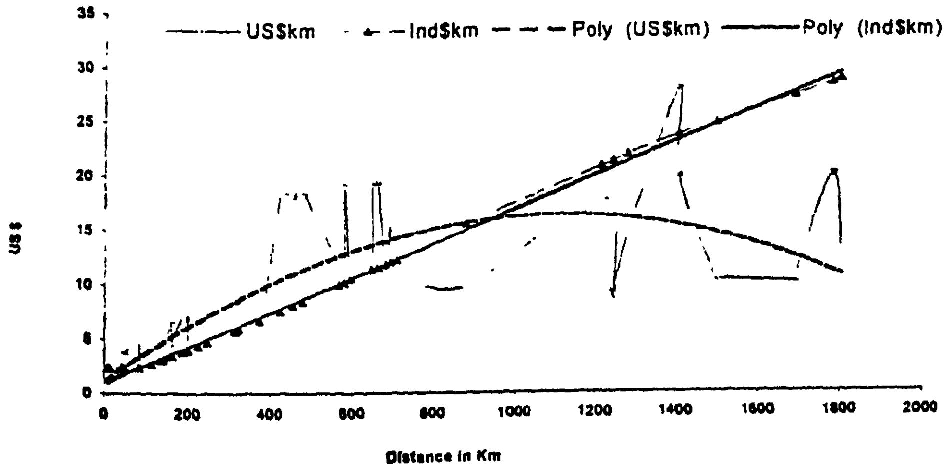


Figure 5 Telescopic advantages for long distance transport of coal in India and USA

There are many other issues such as multiple linkages, irrational linkages etc, which impact the cost of coal directly, and therefore the cost of generation.

Cost of working capital and coal stocking at the utilities
The reduction of working capital in a power plant would translate into savings, which could lower the tariff of electricity. One way to reduce the cost is to optimize the coal inventory at the utilities. The Central Electricity Authority[2] (CEA), under Ministry of Power, monitors the stock position of all coal fed power stations everyday. Until recently, these power stations were required to carry coal stocks equivalent to either of 15 or 30 day's consumption, depending on whether they were pithead or rail-fed utilities. The distance from the coal source, logistics of transportation or capacity to stock were not considered when this essentially adhoc norm was formulated.

Several power boards and power utility operators constantly contested these norms and finally, a group was constituted by the Cabinet Secretariat under the chairmanship of the Secretary, Planning Commission in 20003 to review the stocking norms at coal fired power stations. The Group submitted its report in August 2000 suggesting norms based on distance of the utility from the coal source and the mode of transport; all rail or rail-cum-sea. Only three broad slabs: less than 500 km, between 500 and 1200 km and more than 1200 km from the coal source were considered. The report did not indicate if any kind of modeling was used to arrive at the slabs. The new norms were obviously based on an adhoc assessment much like the earlier one.

The Group suggested that only utilities, located more than 1200km from the supply source, or fed by inter-modal systems of transport, need maintain a flat stock equivalent to 30 day's consumption. Those situated 500km to 1200km away needed to keep a 25 day's stock while utilities within 500km from the source of coal were advised to maintain 20 day's stock. The norm for pithead utilities remained unchanged.

The referred report also included comments from stakeholders such as the Indian Railways (IR), the Ministries of Coal, Power, Finance, the Planning Commission and the CEA. The Ministry of Power had advocated lower norms while the Ministry of Coal and the IR contested this. Both the IR and Coal India Ltd (CIL) under the administrative control of Ministry of Coal (MOC), are huge monopolies and have been putting pressure on the power sector for stocking as much coal as the CIL can supply and the IR can move. Obviously, a very large coal stock at the power station will insulate both the IR as well as the CIL from criticism because of low or no stocks. However, it will mean a large amount of working capital being tied up in the coal resulting in a higher fuel cost. No Commission has so far addressed the problems of coal inventory management leading to increased costs.

The phenomena of extra large inventory holding started in the year 1996-97 when the total coal stocks for all coal fired power stations rose from less than 3 million tonne (MT) in January 1996 and a little over 5 MT in March 1996 to more than 10 MT in April 1997. Next year-end, in April 1998, it went up to more than 17 MT without corresponding increase in the generating capacity. Since then, the total closing stocks of coal at the utilities has been hovering around 14 MT. As a rough estimate, more than 2,000 crores of working capital is currently locked up permanently in the coal inventory of all power utilities.

---

[2] This is carried out by the Operation Monitoring (Fuel Management) Division, CEA, Ministry of Power, Government of India

[3] Report of the Group to look into coal stock requirements of various thermal power stations, GOI, Planning Commission, Power & Energy Division, August 2000.

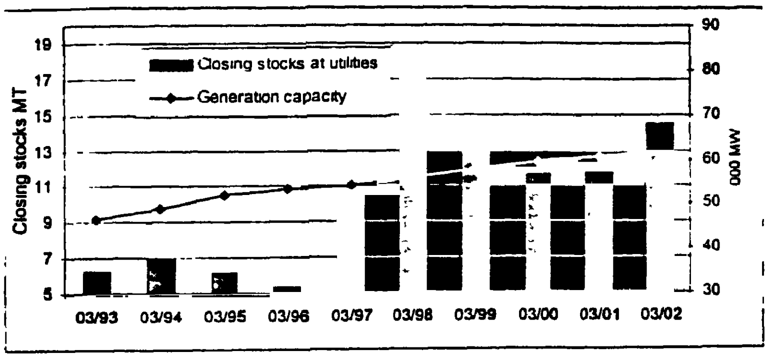


Figure 6 Generation capacity & closing stocks: coalfired utilities
Source: CEA

In the pre 1997 period, the closing stocks at all coal fed power utilities were reported to be between 100 and 150 tonne/ MW. In 1998, it more than doubled to over 300 tonne per MW as result of sudden push by the coal industry. Presently it is hovering between 200 to 250 tonne/MW.

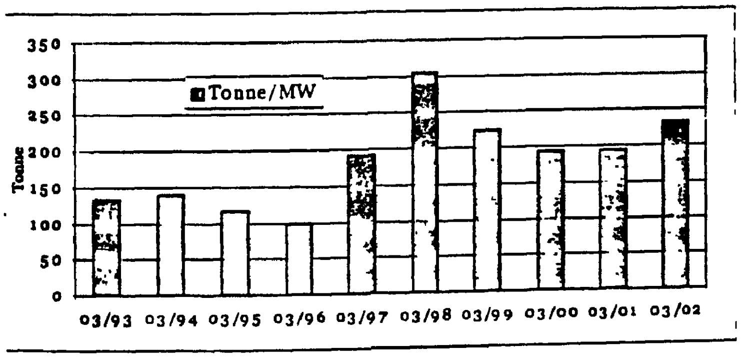


Figure 7 Closing stocks at coalfired utilities: tonne per MW
Source: CEA

In absence of optimization of fuel costs to materialize in the present situation, the utility or the electricity board must enter into a legally enforceable fuel supply agreement with national coal companies. The agreement must contain a clause pertaining to the quantity, quality and timeliness of supplies with bonus and penalty clauses built into it. No 'best effort' contract can serve any purpose as is clear from the existing situation. Similarly, there must be a back-to-back contract with the IR for supplying sufficient number of empty wagons to the colliery and loaded wagons to the thermal power station at a mutually agreed frequency. Such agreements were reached with a couple of independent power producers in the past[4] though ultimately these power plants did not materialize.

---

[4] In cases of Hinduja and Bina Power

Finally

It is amply clear that with such strong interdependence of the three sectors namely rail, coal and power, the reforms in only one sector is not going to be very effective unless reforms in the other two sectors are synchronized. Reforming power alone is not going to give full benefits to the consumer of electricity.

Pending such reforms in the other two sectors, the electricity regulator has to examine the fuel cost to ensure that it is efficient before allowing it in the tariff.

RESTRUCTURING OPTIONS IN URBAN WATER SUPPLY SECTOR

presentation at
Training Program for IAS Officers on
Infrastructure Deregulation
TERI, New Delhi
December 9-13, 2002

V. Satyanarayana
Senior Infrastructure Finance Advisor

INDO-USAID FINANCIAL INSTITUTIONS
REFORM AND EXPANSION (FIRE) PROJECT

STRUCTURE OF PRESENTATION

- The FIRE Project
- Current Status of the Sector
- Private Sector Participation (what happened and what is going on)
- Need for Focus on Public Sector Reforms
- Support Framework at State and Central

FIRE BACKGROUND

- Financial Institutions Reform and Expansion Project
- A joint program of Governments of India and United States funded by USAID
- Partners are MOUD, HUDCO, IL&FS, NIUA, USAID, state and local governments
- Operational since 1995. Phase II is upto September 2003. To be extended upto 2007.

FIRE OBJECTIVES

- Develop an infrastructure finance system.
- Promote the development of commercially viable infrastructure projects including those with private sector participation.
- Improve the capacity of local and state governments.

STATUS OF URBAN INFRASTRUCTURE

Water Supply

• Access to safe drinking sources	82%
• Access to tapped water	65%
• Access to tapped water within premises	42%
• Average per capita supply	54 to 160 lpcd

- Unreliable, inadequate, unknown quality of water

Sanitation

• Access to toilets	63%
• Access to toilets within premises	33% (est)
• Connections to sewerage	28% (est)

- Only 70 out of 289 Class I cities have sewerage facilities

OVERVIEW (Constraints)

- **SYSTEM INEFFICIENCIES**
- Cost recovery less than known O&M costs
- Collection performance of taxes in the range of 25 to 60 %
- Unaccounted for water : (Mostly Unknown) - 40-65%
- High employees to connection ratios (20 to 60 per 1000)
- Lack of consumer and commercial orientation

- **PROJECT DEVELOPMENT CONTSTRAINTS**
- Projects developed largely on technical designs with inadequate concerns for financial viability
- Inadequate technical capability to develop projects in a commercial format

INVESTMENT REQUIREMENTS

Investment Short Falls - Ninth Plan Period

For urban water and sewerage services

(at 1996-97 prices in crores)

Annual Requirements	10,000 to 30,000
Resource Flow Estimates	1800 to 3000

(Central, State, Local and Institutional Finance)

Requirements are **5 to 10 times** the likely resources

GLOBAL FINANCIAL MARKETS

- Private capital flows - $ 754 billion - for infrastructure in developing countries (1991-2001)
- $ 38 billion for water and sanitation in private sector projects in developing countries
- India - urban water sector attracted - around 100 million dollars

PSP:What has happened 1994-99 ?

- Strong local initiative for urban reforms including private sector participation
- Approximately, 28 cities have attempted private sector participation in variety of forms such as BOT, BFT, etc
  - Hyderabad, Tiruppur, Bangalore, Chennai, Pune, Goa, Kolhapur, Surat, Cochin, Vijayawada, Vishakapatanam, Nagpur, Kakinada, Baroda, Dewas, etc
- Excellent initiative and energetic and eager leadership

PSP:What has happened 1994-99 ?

- Focus on capacity augmentation rather than distribution
- Inappropriate project structuring without considerations for financial viability
- Lack of project development ability and risk management perspective at local level
- No state level commitment or support
- Only limited attention paid to institutional restructuring and reforms
- Only Tiruppur, Jamshedpur and Alandur are successful

TIRUPPUR EXPERIENCE - I

- Local industry initiative : by Tiruppur Exporters Association. Since 1994
- Support from Infrastructure Leasing and Financial Services Ltd (IL&FS) for project development and financial structuring
- 30 year Concession - to New Tiruppur Area Development Corporation (SPV)
- Components and Costs
  - Water supply (Domestic and Industrial),Municipal Sewerage, Effluent Treatment and Roads, Cost of Rs 1200 crores

---

TIRUPPUR EXPERIENCE - II

- Finance :To be mobilised by Special Purpose Vehicle. Part finance (to the extent of 15 %) by the Contractor
- Financial Viability
  - Investments are to be recovered through a composite water charge. Industry cross subsidizes the domestic sector. This is to be supplemented by revenues from land development
- Significant State Support in Project Development and Finance.
- Bid received in September 1997. Part construction is underway. Financial closure to be completed in Jan 2003

PSP: What is going on 2000-02

- Change of mindset and moderate consensus
- Consensus on need to concentrate on distribution and service quality rather than capacity augmentation
- Emerging focus on institutional restructuring and reforms
- Several new initiatives with changed focus
- Emerging state level support framework and commitment for reforms
- Central level framework being put in place

What is going on 2000-02

(new initiatives)

- Bangalore management contract
  - Vivendi and Lyonnaise have submitted proposal for two pilot areas on MOU basis in April 2000
  - Advanced stage to be finalized by March 2003
- Management contracts for 13 medium towns in Karnataka
  - Three year initiative
- Mumbai management contract
  - Part of the city, Three year initiative

What is going on 2000-02

(new initiatives)

- Sangli municipal water supply
- Hyderabad restructuring and concession
- Jamshedpur (signed on November 16, 2002)
- Delhi sonia vihar water treatment plant
- Zahirabad in AP (Hyderabad metro water)
- Vishakapatnam industrial water
- Dewas and Greater Noida

Some of these will emerge as models

What is going on 2000-02

(New Initiatives - Sangli)

- Sangli Water Supply Project – Management Contract with the support from the IL&FS and FIRE Project
- The general body passed a resolution to under take the private sector participation for efficiency improvements in November 2000
- Support from the State Restructured Capital Grants Program
- Two Phases - Phase I Management Contract and Phase II Concession
- Procurement is underway
- Appointment of contractor in 2003

What is going on 2000-02

(New Initiatives - Jamshedpur)

- Industrial township of 3,50,000
- Current O&M deficit of Rs 20 crores
- Lease contract of 15 years with Vivendi signed in November 2002
- Capital investments of Rs 100 crores by TATAs
- Tariffs to be set by TATAs
- System will be made self-sufficient on O&M account by end of the Contract
- 30 months of preparation

What is going on 2000-02

(New Initiatives - Alandur)

- Population of 1,40,000, located with in Chennai Metropolitan Area
- Private sector participation in construction of sewerage system - Rs 27 crores
- BOT for 14 years for sewage treatment plant - Rs 8 crores
- Financing from community contribution, state grants and private sector for BOT component
- Recovery through connection charges (Rs 5000 for domestic and Rs 10000 for non-domestic) and sewage monthly charges (Rs 150 per month)
- Construction completed

PARADOX

Of
Private Sector Participation

….those who are best able to manage themselves will attract private sector participation and the rest will be left out in the process

what is necessary is **public sector reforms** at state and local level……

REFORM PROCESS IN MAHARASHTRA

- Government of Maharashtra initiated development of policy framework in January 2000
- Sukthankar Committee for rural and urban water established in Jan 2000
- The Committee submitted the report in March 2001 after extensive consultations
- Concurrent implementation

Summary Recommendations
Urban Sector (1)

- Demonstration Projects (Sangli PSP)
- Restructuring of WSS Institutions
- Creating Incentives for Reforms
- Support Framework for Capacity Building
- Independent Regulatory Framework

Summary Recommendations
Urban Sector (2)

- ULBs to be a facilitator rather than provider
- To set up independent and autonomous City Water Supply Entities (CWSEs)
- Form of CWSEs may
  - Municipal enterprise/undertaking
  - Company (government ownership to private)
  - Mutual co-operative (may be difficult unlike rural sector)
  - Form of long-term concessions with private sector
- Enhanced role for community
- Focus on efficiency improvements

Summary Recommendations
Urban Sector (3)

- A state level water board, Maharashtra Jeevan Pradhikaran (MJP)
- Role of (MJP) in the future to include
  - Make MJP accountable to cities
  - Restructured MJP to be only a design and construction management entity for small and medium towns.
  - Separate O&M Company
- **MJP role of being conduit for mobilizing finances need to be discontinued as financing is a special function and the market is adequately developed**
- Restructuring study is underway

Summary Recommendations
Urban Sector (4)

- Create Incentives for Reforms through restructuring of State Grants (need and output based)
- Restructured Capital Grants Program to create incentives for efficiency improvements such as leakage reduction and energy savings (30 percent of the state grants are reserved for this purpose)
  - Issued guidelines for water and energy audit
  - Issued guidelines for private sector participation
  - Implementation in Sangli and Nashik
- Accrual based accounting system in urban local bodies. GOM in association with the FIRE
- State Finance Commission to create incentives

Summary Recommendations
Urban Sector (5)

- Support Framework for Capacity Building
- Maharashtra Urban Infrastructure Fund (MUIF) to support cities in capacity building, project development, institutional restructuring and facilitating finance through guarantees
- MMRDA, GOM and FIRE are setting up of MUIF. To be operational by April 2003

Summary Recommendations
Economic Regulation (1)

- As a key instrument for sector reforms
- Functions –
  - economic regulation of tariffs
  - monitoring of quality of service
  - issue and regulation of licences
  - Co-ordination with other regulators (public health and environment)
  - Collection of dissemination of sector information
- Jurisdiction:Urban and regional schemes. Regulation of public sector providers also

Summary Recommendations Economic Regulation (2)

- Community regulation
- Centralisation Vs Decentralisation under 73rd and 74th Amendment
  - Delicate but to be positioned as supporting institutional arrangement
- Strengthen environmental and public health regulation by contracting out monitoring
- Economic regulation note sent out to local bodies

Government of India (GOI) Initiatives

GOI Initiatives (1)

- As a part of the last budget, GOI announced the following schemes
- Urban Reform Initiative Fund (URIF) - Rs 500 crores to create incentives for states to undertake urban, land and housing market reforms
- City Challenge Fund (CCF) - Rs 500 crores
  - To create incentives for cities to undertake comprehensive city restructuring - for larger cities

GOI Initiatives (2)

- Pooled Finance Development Fund (PFDF) - Rs 400 crores
  - To create credit enhancement facility (guarantee) and to pay for reforms required for market access by small and medium towns
- Tax Free Municipal Bonds (Rs 500 crores)
- Model Municipal Law to facilitate reforms
- Guidelines for Private Sector Participation

SUMMARY/LESSONS

- 90s have witnessed change – needs to be scaled up
- Numerous attempts at reforms across the country, but very few isolated islands of innovation
- Lack of comprehensive reforms and address of harder issue of tariffs and adequate coverage
- Lack of creditworthiness of cities
- Emerging State and Central Support (need to move to implementation at state and local levels)
- Need to talk of 100s of "islands of innovations" rather than few dozens
- Appropriate time to implement structural reforms

Oil and Gas Deregulation: India Status and Issues

By Shri Devi Dayal, IAS (Retd.)
Former Addl. Secretary, MOP&NG
& Secretary, Banking, Govt. of India

NEED FOR Deregulation

- ADVANCEMENT OF SCIENCE AND TECHNOLOGY. COMMUNICATION. DISPERSAL OF RESOURCES AND EFFECTIVE INTERPLAY OF ECONOMIC FACTORS HAVE HEIGHTENED DEMAND FOR EFFICIENCY. COMPETITION. ECONOMY AND PROFITS FOR BUSINESS ENTERPRISES AROUND THE WORLD
- GLOBALISATION FACILITATED AND FORCED BY ABOVE FACTORS AND TRANSFER OF LABOUR, SKILLS, CAPITAL AND TECHNOLOGY
- LIBERALISATION DEREGULATION AND PRIVATISATION CONSEQUENCES OF GLOBALISATION
- GOVERNMENT MONOPOLY TO VANISH AND PRIVATE ENTREPRENEUR TO ENTER
- GOVERNMENT PRESENCE TO CONTINUE TO ENSURE REAL COMPETITION AND PROTECTION OF CONSUMER INTEREST AND FOR SECURITY OF SUPPLY

CONTD...

NECESSITY OF INDEPENDENT REGULATOR

- NEW SCENARIO- GOVERNMENT ENTITIES EXISTING COMPANIES AND NEW ENTRANTS- NATIONAL AND INTERNAITONAL- ALL TO COMPETE IN SAME ACTIVITIES
- CONFLICTING INTERESTS OF GOVERNMENT EXISTING COMPANIES, NEW ENTRANTS AND CONSUMER
- GOVERNMENT TO REMAIN AN INTERESTED PARTY - NOT POSSIBLE TO BE FREE FROM PULLS AND PRESSURES BOUND TO BE SLOW AND DIFFUSED IN FOCUS
- TO FACILITATE TRANSITION FROM CONTROLLED TO DEREGULATED REGIME AND RESOLVE CONFLICTS, INDEPENDENT INTERMEDIATING REGULATORY AUTHORITY NEEDED
- FOR MODERN BUSINESS AND INDUSTRIAL ACTIVITY AND A FOCUSED, ELABORATE AND EFFECTIVE SYSTEM OF INDEPENDETN REGULATION NECESSARY
- SO INDEPENDENT EFFECTIVE AND NON-GOVERNMENT CONTROLLED REGULATOR NECESSARY

DEREGULATION OF PETROLEUM SECTOR IN INDIA

- TILL EARLY 1990s, PETROLEUM SECTOR FULLY CONTROLLED BY GOVERNMENT
- EXPLORATION AND PRODUCTION OF CRUDE AND GAS MAINLY BY TWO NATIONAL OIL COMPANIES (NOCs)
- EXPLORATION BLOCKS GIVEN ON NOMINATION BASIS TO NOCs
- REFINING ONLY BY GOVERNMENT OIL COMPANIES
- MARKETING ALSO CONTROLLED BY FOUR GOVERNMENT MARKETING COMPANIES EXCEPT LIMITED TRADE IN LUBRICANTS AND WAX BY PRIVATE COMPANIES

CONTD...

- COST PLUS PRICING FOR PRODUCERS AND MARKETEERS AND COST-SUBSIDISED PRICE FOR CONSUMER UNDER ADMINISTERED PRICING MECHANISM (APM)
- APM CARRIED THROUGH SELF BALANCING OIL POOL ACCOUNT
- PETROLEUM SECTOR ALSO STARTED DEREGUALTION FROM 1988-89
- NOW WHOLE PETROLEUM SECTOR OPENED UP FOR PRIVATE INVESTMENT AND PARTICIPATION
- UNDER NEW EXPLORATION LICENSING POLICY (NELP), EXPLORATION BLOCKS TO BE GIVEN UNDER OPEN BIDDING ON NON-DISCRIMINATORY BASIS
- REFINING OPENED FOR 100% PRIVATE FOREIGN INVESTMENT
- MARKETING FOR ALL PRODUCTS EXCEPT TRANSPORTATION FUELS FULLY OPENED UP

CONTD...

- MARKETING OF TRANSPORTATION FUELS ALSO ALLOWED TO COMPANIES INVESTING RS 2000 CRORES IN REFINING, INFRASTRUCTURE OR PRODUCING 3 M TON CRUDE / GAS ANNUALLY
- YET, OIL SECTOR YET NOT FULLY COMPETITIVE AND NOT ATTRACTING REQUIRED PRIVATE INVESTMENT
- MORE DEREGUALTION AND ASSURANCE OF FAIR DEAL
- FOR BETTER CONFIDENCE OF INVESTOR AND EFFECTIVE DISPENSATION AS WELL FOR CONSUMER PROTECTION, INDEPENDENT TRANSPARENT AND EFFECTIVE OIL REGULATOR CONSIDERED NECESSARY
- INVESTMENT TO FOLLOW IF REGULATOR DISCHARGED ITS FUNCTIONS SATISFACTORILY

OBJECTIVES AND ISSUES FOR A MODEL REGULATORY AUTHORITY

- SOME COMMON WITH OTHER REGULATORS AND SOME SPECIFIC FOR OIL AND GAS
- PROMOTING EFFICIENCY COMPETITION, ECONOMY AND THEREBY INVESTMENT, CONSUMER PROTECTION REGULATION OF TARIFF AND QUALITY IN AN EFFICIENT AND TRANSPARENT MANNER
- ENTRY AND EXIT NORMS TO BE SMOOTH AND REASONABLE
- EXISTING AND LARGE PLAYERS NOT TO CHOKE OFF NEW ENTRANTS AND SMALL PLAYERS
- RULES OF OPERATION TO BE EVOLVED BY FELT NEEDS AND SOUND PRINCIPLES AFTER DUE CONSULTATION

CONTD...

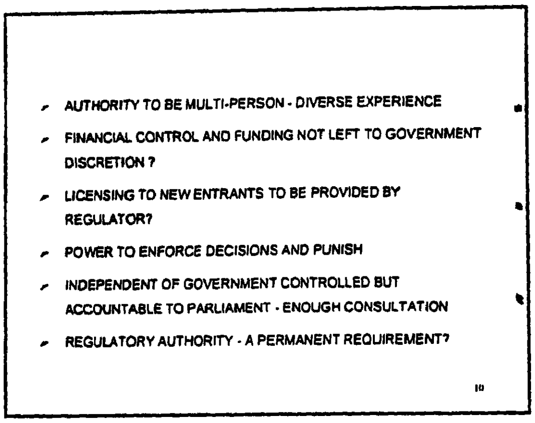
- COMPETITION BY PREVENTING MONOPOLISTIC HOLD.

- FOR OIL & GAS CONSUMER WANTS SECURE ACCESS TO FUEL OF RIGHT QUALITY AND QUANTITY, IN NOMRAL REACH, AT COMPETITIVE PRICE AND GOOD CUSTOMER CARE
- CHOICE INFORMATION AND GRIEVANCE REDRESSAL TO CONSUMER
- DEAL FIRMLY WITH UNDUE DEMANDS AND PRESSURES FROM PUBLIC SECTOR, PRIVATE COMPANIES AND ALL OTHER PARTIES
- MANY FUNCTIONS LEGATED FROM OIL CO-ORDINATION COMMITTEE TO BE PERFORMED BY REGULATOR
- ENSURE LEAST COST TO ECONOMY & FAST GROWTH BY SHARING OF ASSETS
- COMMON USAGE RIGHTS FOR PIPELINE AND INFRASTRUCTURE

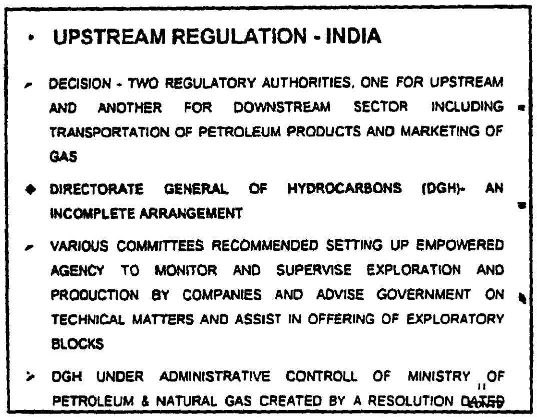
CONTD...

- ENSURE SUPPLY OF PETROLEUM PRODUCTS IN REMOTE AND DIFFICULT AREAS
- POWER TO ALLOW TAKE OVER OF FACILITIES AND OPERATION BY ANOTHER AGENCY INCASE OF STRIKE, NATURAL CALAMITIES OR PUBLIC INTEREST
- AUTHORITY TO BE INDEPENDENT, TRANSPARENT, NON-DISCRIMINATORY AND SWIFT IN ACTION
- SUCCESS DEPENDS ON FAVOURABLE PUBLIC OPINION, PUBLIC AND INVESTOR CONFIDENCE
- JUDGEMENTAND DISPENSATION TO BE PREDICTABLE AS PER POLICY
- SPEED IMPORTANT REQUIREMENT FOR PROMOTING INVESTMENT AND REDRESS GRIEVANCES

CONTD...

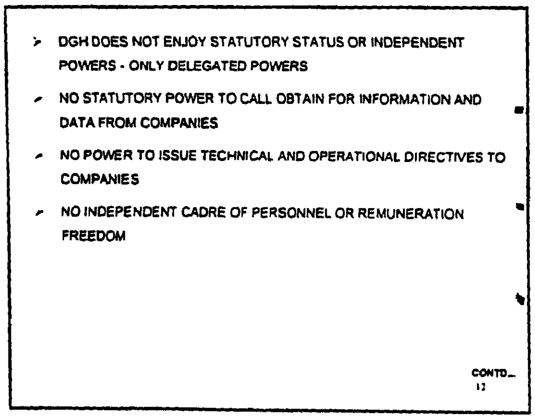


- AUTHORITY TO BE MULTI-PERSON - DIVERSE EXPERIENCE
- FINANCIAL CONTROL AND FUNDING NOT LEFT TO GOVERNMENT DISCRETION ?
- LICENSING TO NEW ENTRANTS TO BE PROVIDED BY REGULATOR?
- POWER TO ENFORCE DECISIONS AND PUNISH
- INDEPENDENT OF GOVERNMENT CONTROLLED BUT ACCOUNTABLE TO PARLIAMENT - ENOUGH CONSULTATION
- REGULATORY AUTHORITY - A PERMANENT REQUIREMENT?



- **UPSTREAM REGULATION - INDIA**

- DECISION - TWO REGULATORY AUTHORITIES, ONE FOR UPSTREAM AND ANOTHER FOR DOWNSTREAM SECTOR INCLUDING TRANSPORTATION OF PETROLEUM PRODUCTS AND MARKETING OF GAS
- DIRECTORATE GENERAL OF HYDROCARBONS (DGH)- AN INCOMPLETE ARRANGEMENT
- VARIOUS COMMITTEES RECOMMENDED SETTING UP EMPOWERED AGENCY TO MONITOR AND SUPERVISE EXPLORATION AND PRODUCTION BY COMPANIES AND ADVISE GOVERNMENT ON TECHNICAL MATTERS AND ASSIST IN OFFERING OF EXPLORATORY BLOCKS
- DGH UNDER ADMINISTRATIVE CONTROLL OF MINISTRY OF PETROLEUM & NATURAL GAS CREATED BY A RESOLUTION DATED



- DGH DOES NOT ENJOY STATUTORY STATUS OR INDEPENDENT POWERS - ONLY DELEGATED POWERS
- NO STATUTORY POWER TO CALL OBTAIN FOR INFORMATION AND DATA FROM COMPANIES
- NO POWER TO ISSUE TECHNICAL AND OPERATIONAL DIRECTIVES TO COMPANIES
- NO INDEPENDENT CADRE OF PERSONNEL OR REMUNERATION FREEDOM

CONTD...

STEPS FOR INDEPENDENT REGUALTORY AUTHORITY

- IN-PRINCIPLE APPROVAL OF CABINAT OBTAINED IN 1997 FOR SETTING UP INDEPENDENT REGUALTORY BODY FOR UPSTREAM SECTOR THROUGH AN ACT OF PARLIAMENT
- FUNCTIONS - ADVISE GOVERNMENT ON ALL TECHNICAL MATTERS HELP OFFERING EXPLORATION BLOCKS CARRY OUT SURVEYS AND INFORMATION DRILLING, ISSUE DIRECTIVES AND GUIDELINES TO OPERATORS FOR OPTIMAL EXPLOITATION OF RESERVES AND CARRY OUT RESEARCH AND STUDY IN UPSTREAM SECTOR
- NO PROGRESS SO FAR ON ABOVE CABINET DECISION
- SUGGESTION FOR EMPOWERING DGH TO FUNCTION AS FULL-FLEDGED REGULATOR NOT ACCEPTED
- CONFUSION AND IN-ACTION BY GOVERNMENT ON UPSTREAM REGULATORY AUTHORITY

- **STRENGTHING DEREGUALTION IN DOWNSTREAM OIL SECTOR IN INDIA- PROGRESS IN SETTING UP INDEPENDENT REGULATORY AUTHORITY**
- VARIOUS COMMITTEES RECOMMENDED ONE REGULATORY AUTHORITY FOR WHOLE OF DOWNSTREAM SECTOR INCLUDING GAS
- AFTER DEREGULATION, NECESSARY TO CONTROL THE ENTRY OF NEW OPERATORS AND FUNCTIONING OF ALL OPERATORS, TO ENSURE CONSUMER PROTECTION, PROMOTE NEW INVESTMENT AND HEALTHY GROWTH OF SECTOR
- REGULATOR TO OVERSEE REFINING, PROCESSING, STORAGE, TRANSPORTATION, DISTRIBUTION, MARKETING AND SALE OF PETROLEUM PRODUCTS INCLUDING PIPELINES, LNG TERMINALS, CNG, ETC
- DRAFT PROPOSAL ON DOWNSTREAM REGULATORY FRAMEWORK EXCLUDING NATURAL GAS PREPARED BY TERI - CIRCULATED AMONG MINITRIES IN EARLY 1999

CONTD..

- "INDIAN HYDROCARBON VISION - 2025" REPORT RECOMMENDED COMMON REGULATORY MECHANISM FOR DOWNSTREAM SECTOR AND NATURAL GAS
- SUGGESTIONS FOR SINGLE ENTITY FOR WHOLE SECTOR NOT FOUND FEASIBLE
- MANY MEETINGS HELD, GOVERNMENT DECISION FOR SINGLE DOWNSTREAM REGULATORY AUTHORITY AS ABOVE
- PETROLEUM REGULATORY BOARD BILL, 2002 INTRODUCED IN PARLIAMENT ON 6TH MAY, 2002
- BILL REFERRED TO PARLIAMENTARY STANDING COMMITTEE FOR MINISTRY OF PETROLEUM & NATURAL GAS

• FEATURES AND PROVISIONS

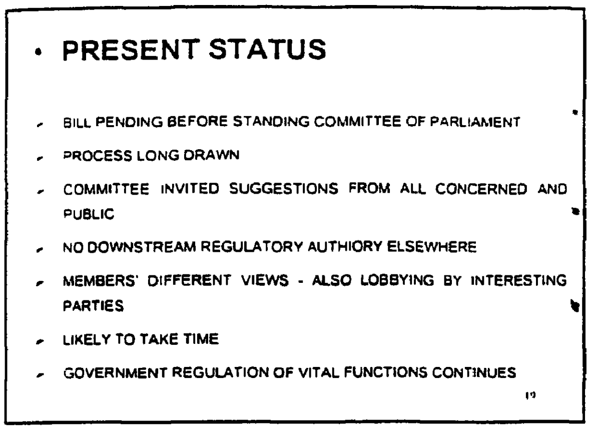
- REGULATORY BOARD - INDEPENDENT, AUTONOMOUS AND STATUTORY BODY
- GRANT MARKETING RIGHTS FOR NOTIFIED PETROLEUM PRODUCTS
- PERMISSION FOR ESTBALISHING LNG TERMINALS
- REGULATE TRANSPORTATION OF PETROLEUM PRODUCTS INCLUDING GAS & SETTING UP AND OPERATION PIPELINES
- PIPELINES TO BE COMMON CARRIER - NOTIFY
- TO PROMOTE FAIR TRADE AND COMPETITION
- MARKETING NETWORK IN REMOTE AND DIFFICULT AREAS
- ENSURE RETAIL SERVICE AND MARKETING SERVICE OBLIGATION

CONTD

- PREVENT PROFITEERING BY VARIOUS PLAYERS
- FIXED TRANSPORTATION RATE FOR COMMON CARRIER
- PRB TO CONSIST OF CHAIRMAN AND FOUR MEMBERS OF EMINENCE IN SPECIFIED FIELDS
- GOVERNMENT TO GIVE GRANT FOR RUNNING THE BOARD - ALSO INDEPENDENT FUND
- GOVERNMENT TO MAKE RULES AND BOARD TO MAKE REGULATIONS FOR ALL OPERATIONAL MATTERS
- DIRECTIVES TO BE IMPLEMENTED AS DECREE OF CIVIL COURT
- POWER TO IMPOSE PENALTY UPTO RS 1 00 LAKH FOR EACH CONTRAVENTION

CONTD_

- ON COMPLAINT, COURT CAN IMPOSE FINE FROM RS 1 00 LAKH TO RS 10 00 LAKHS AND ALSO IMPRISONMENT FROM 3 TO 5 YEARS FOR VIOLATION OF DIRECTIONS, ETC
- APPLICABILITY OF CODE OF CIVIL PROCEDURE FOR HEARING DISPUTES
- ENTER - ENTITY DISPUTE SETTLEMENT THROUGH SPECIFIC PROCEDURE
- GOVERNMENT POWER TO ISSUE DIRECTIONS IN THE INTEREST OF SOVEREIGNTY AND INTEGRITY OF INDIA OR PUBLIC ORDER
- POWER TO GIVE POLICY DIRECTIONS - CONSULTATION WITH P R B
- POWER TO TAKE OVER MARKETING NETWORK / INFRASTRUCTURE IN EXCEPTIONAL CIRCUMSTANCES
- AUDIT BY COMPTROLLER AND AUDITOR GENERAL OF INDIA AND ANNUAL REPORT TO PARLIAMENT
- SOME TRANSITORY PROVISIONS



PRESENT STATUS

- BILL PENDING BEFORE STANDING COMMITTEE OF PARLIAMENT
- PROCESS LONG DRAWN
- COMMITTEE INVITED SUGGESTIONS FROM ALL CONCERNED AND PUBLIC
- NO DOWNSTREAM REGULATORY AUTHIORY ELSEWHERE
- MEMBERS' DIFFERENT VIEWS - ALSO LOBBYING BY INTERESTING PARTIES
- LIKELY TO TAKE TIME
- GOVERNMENT REGULATION OF VITAL FUNCTIONS CONTINUES

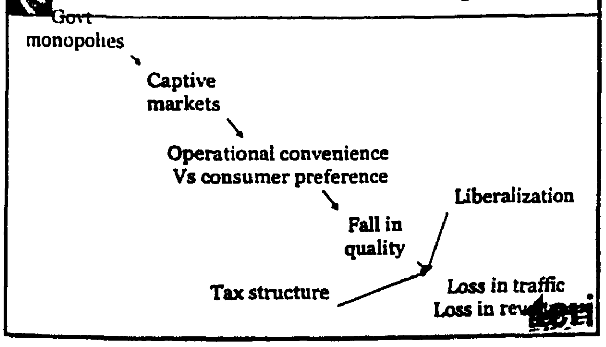
Restructuring State Transport Corporations

Kaushik Deb
Area Convenor, Urban & Transport Systems

Coverage of the presentation

- Redefine the role of SRTUs ensuring
  - *Financial viability*
  - *Efficient & universal service delivery*
- Options for introducing PSP
  - *Investments*
  - *Managerial expertise*
- Strengthening regulation in the sector
  - *Need for independent regulation*

Characterising SRTUs



Govt monopolies

Captive markets

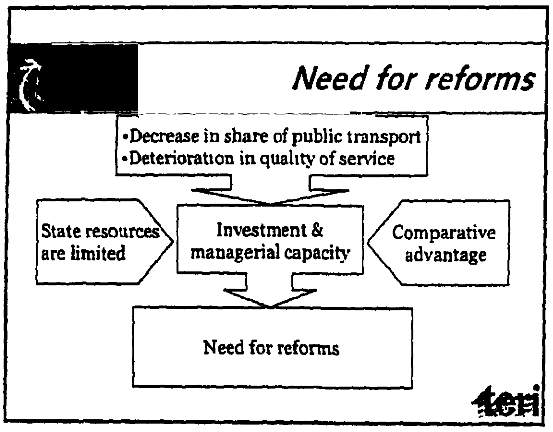
Operational convenience Vs consumer preference

Fall in quality

Liberalization

Tax structure

Loss in traffic
Loss in rev



Need for reforms

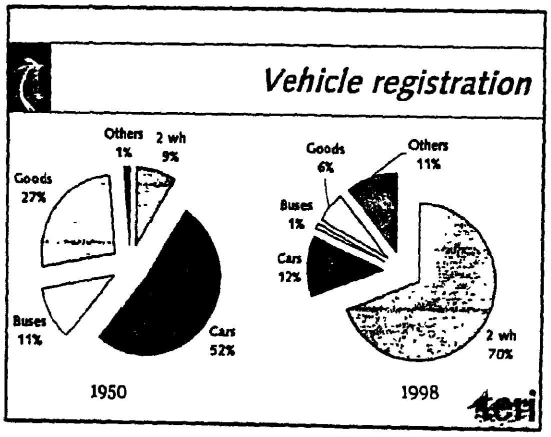
- •Decrease in share of public transport
- •Deterioration in quality of service

State resources are limited

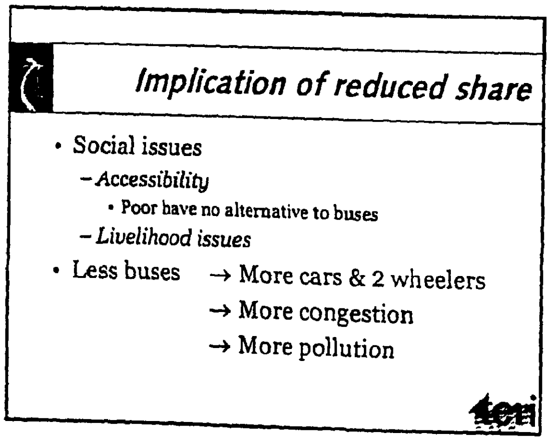
Investment & managerial capacity

Comparative advantage

Need for reforms



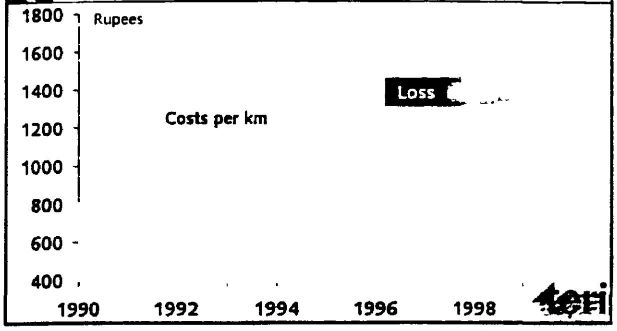
Vehicle registration



Implication of reduced share

- Social issues
  - –*Accessibility*
    - Poor have no alternative to buses
  - –*Livelihood issues*
- Less buses → More cars & 2 wheelers
  - → More congestion
  - → More pollution

Financial performance - SRTUs



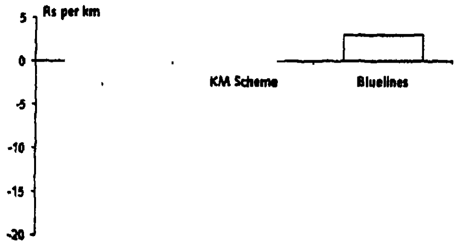
Mounting losses

- Policy shift in IX Plan → fiscal discipline
  - *Outlay only for fleet replacement*
  - *Conditions*
    - SRTU is profitable
    - State Govt able to commit equal amount
  - *Greater role for private sector*
    - Private operators to ply 75% buses
- Potential for revenue generation from
  - *Land resources* – *Technical capability*

Comparative advantage

- Current activities of SRTUs
  - *Bus operations*
  - *Repairs & maintenance of own fleet*
  - *Provision of parking for own buses, terminals for passenger interchanges*
- SRTUs set up for bus operations
- Monopoly & competitive activities
  - *Depots & Terminals* – *Repairs*

Viability of operators



International experience

- Reforms in Argentina, Sri Lanka, Australia, London and Faisalabad
- Characteristics
  - *Unbundling of monolithic organisations*
    - Functional
    - Geographical
  - *Separation of policy & planning from operations*
  - *Greater involvement of private sector*

Models for PSP

...Models

Net cost

- Revenue from ticket sales
- Revenue risk with PO
- Suitable in high density corridors / near monopoly situations
- Requires good contract design

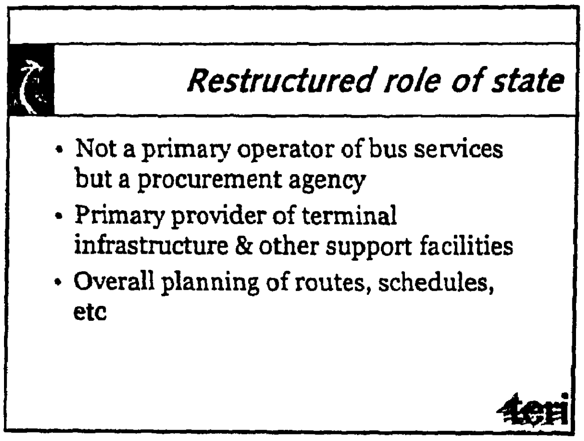
...Models

Gross cost

- Fixed payments for prescribed service
- No revenue risk for PO
- Suitable in cases of uncertain ridership
- Discourages dangerous competition
- Requires effective monitoring

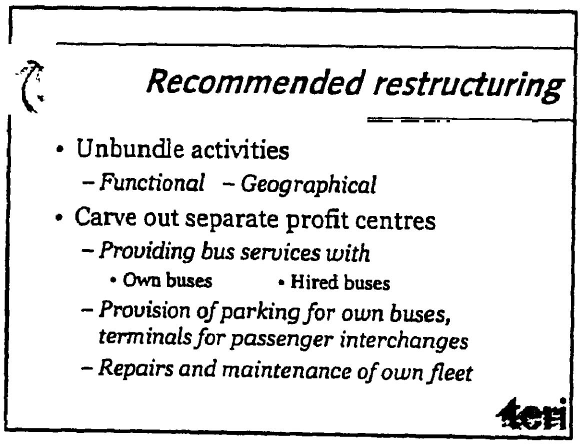
Approach to restructuring

- State to plan & co-ordinate
- Professionalism & credibility to regulation
- Limit public spending to
  - *Monopoly activities*
  - *Where private investment not available*
- Private participation where competition is possible



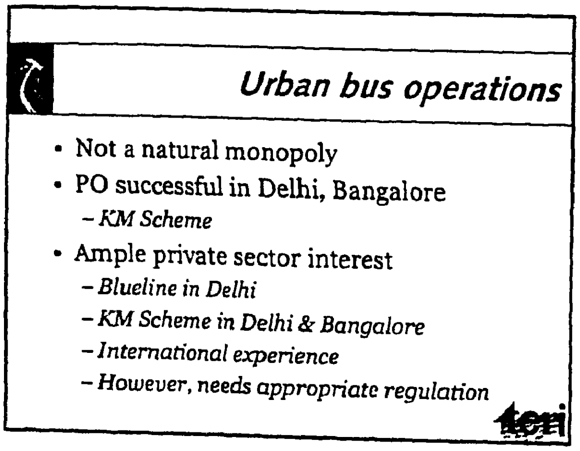
Restructured role of state

- Not a primary operator of bus services but a procurement agency
- Primary provider of terminal infrastructure & other support facilities
- Overall planning of routes, schedules, etc



Recommended restructuring

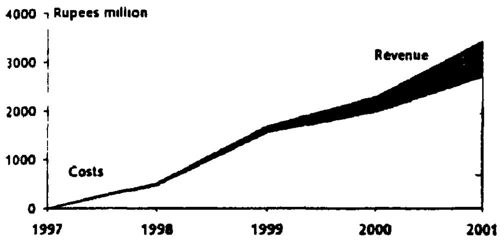
- Unbundle activities
  - *Functional* – *Geographical*
- Carve out separate profit centres
  - *Providing bus services with*
    - Own buses
    - Hired buses
  - *Provision of parking for own buses, terminals for passenger interchanges*
  - *Repairs and maintenance of own fleet*



Urban bus operations

- Not a natural monopoly
- PO successful in Delhi, Bangalore
  - *KM Scheme*
- Ample private sector interest
  - *Blueline in Delhi*
  - *KM Scheme in Delhi & Bangalore*
  - *International experience*
  - *However, needs appropriate regulation*

KM Scheme in Delhi



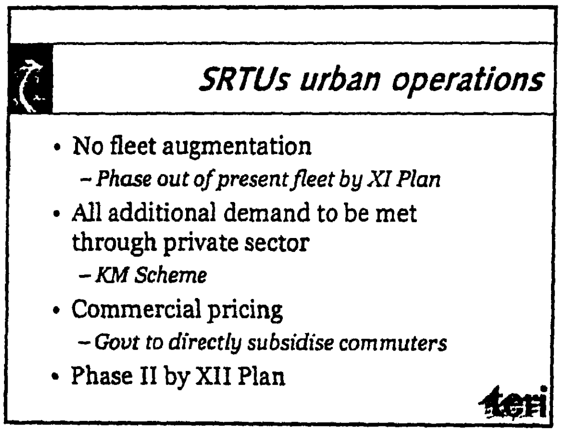
Caveats

- Large PO absent
- Strong universal service obligation
  - *Implications for tariff*
  - *Implications for service quality*
- Safety aspects
- Inadequate regulatory arrangements
  - *Time lag for building capacity*
- Need for phased approach

Urban operations: Phases

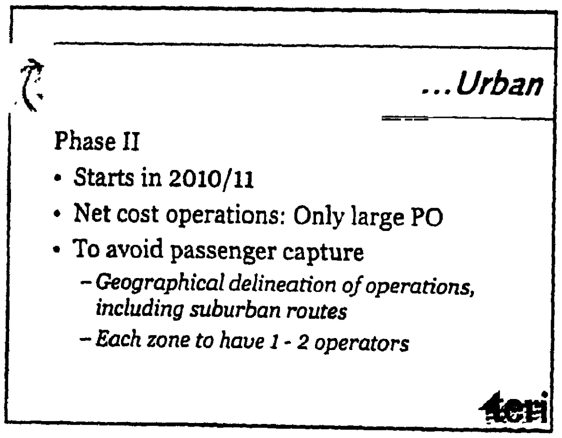
Phase I

- Phase out existing single bus operators
  - *Bluelines – Whitelines – others*
- Strategies
  - *Non-renewal of permits – Sec 103(2)*
  - *Encourage KM Scheme '*
- Private operations only under SRTU
  - *KM Scheme, not Bluelines*



SRTUs urban operations

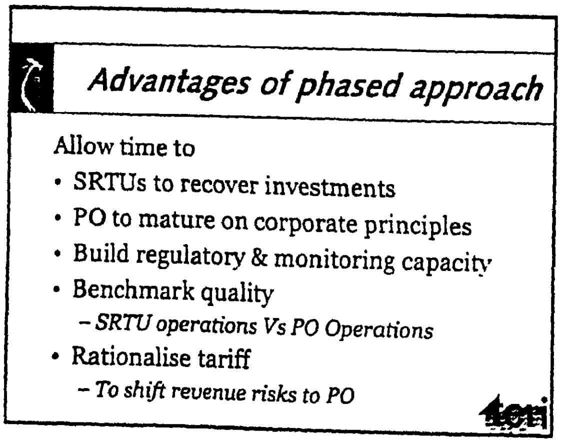
- No fleet augmentation
  - *Phase out of present fleet by XI Plan*
- All additional demand to be met through private sector
  - *KM Scheme*
- Commercial pricing
  - *Govt to directly subsidise commuters*
- Phase II by XII Plan



...Urban

Phase II

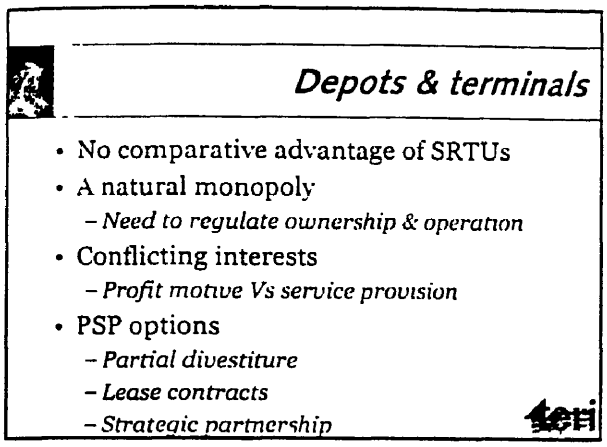
- Starts in 2010/11
- Net cost operations: Only large PO
- To avoid passenger capture
  - *Geographical delineation of operations, including suburban routes*
  - *Each zone to have 1 - 2 operators*



Advantages of phased approach

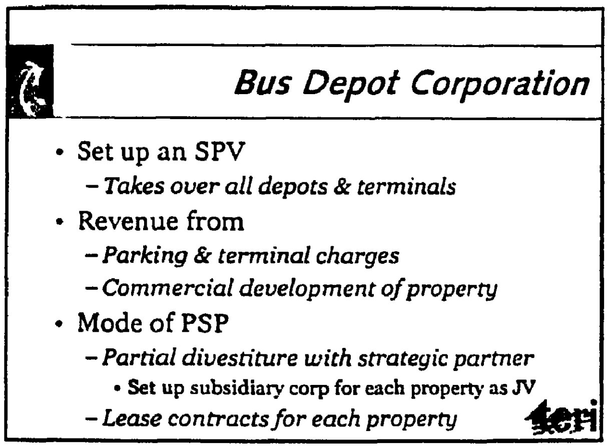
Allow time to

- SRTUs to recover investments
- PO to mature on corporate principles
- Build regulatory & monitoring capacity
- Benchmark quality
  - *SRTU operations Vs PO Operations*
- Rationalise tariff
  - *To shift revenue risks to PO*



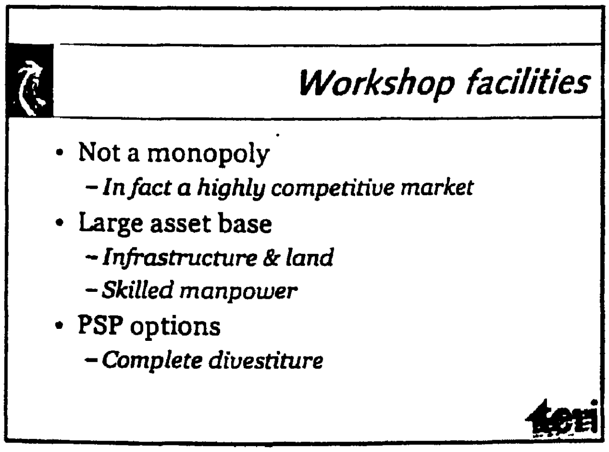
Depots & terminals

- No comparative advantage of SRTUs
- A natural monopoly
  - *Need to regulate ownership & operation*
- Conflicting interests
  - *Profit motive Vs service provision*
- PSP options
  - *Partial divestiture*
  - *Lease contracts*
  - *Strategic partnership*



Bus Depot Corporation

- Set up an SPV
  - *Takes over all depots & terminals*
- Revenue from
  - *Parking & terminal charges*
  - *Commercial development of property*
- Mode of PSP
  - *Partial divestiture with strategic partner*
    - Set up subsidiary corp for each property as JV
  - *Lease contracts for each property*



Workshop facilities

- Not a monopoly
  - *In fact a highly competitive market*
- Large asset base
  - *Infrastructure & land*
  - *Skilled manpower*
- PSP options
  - *Complete divestiture*

...Workshop

- Complete divestiture
- Unbundle into separate company
  - *To service the entire vehicle fleet - cars, buses, trucks*
  - *Become Authorised Service Stations*
  - *Could be designated as certifying centres for annual I&M for commercial vehicles*
- Commercial pricing - no subsidy
- Privatisation over time

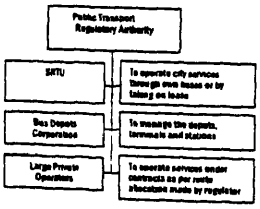
Need for regulation

- Monopoly activities
  - *Bus operations*
  - *Depots & terminals*
  - *Urban rail operations*
- Facilitating private investment
- Insulating from political risk
  - *High in public transport. Eg fares, permits*
- Continued role of govt agencies
  - *SRTU, Indian Railways*

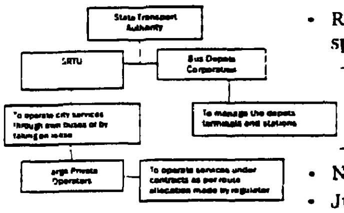
Alternative arrangements

Alternative I

- Set up an independent regulator via legislation
- Lends professionalism & credibility to the regulatory process
- Can provide for co-ordination with MRTS


Public Transport Regulatory Authority
SRTU
To operate city services through own buses or by taking on lease
Bus Depots Corporation
To manage the depots, terminals and stations
Large Private Operators
To operate services under contracts as per route allocations made by regulator

Alternative arrangements


State Transport Authority
SRTU
Bus Depots Corporation
To operate city services through own buses or by taking on lease
To manage the depots terminals and stations
arge Private Operators
To operate services under contracts as per route allocation made by regulator

Alternative II

- Regulatory functions split
  - *SRTU planning, network design, route allocation, setting and monitoring QOS*
  - *STA. issue permits based*
- No legislation required
- Jurisdiction limited to road transport only

Regulatory strategy

- Set up an independent regulator
- Advantages
  - *Lends credibility & professionalism*
  - *Can provide for co-ordination with rail*
- Need for Central Legislation
  - *Most legislations are Central*
  - *Ensure uniformity in regulation between states*

...Strategy

- Introduce legislation to set up an independent regulator
  - *Demonstrate intent to reform*
- Set up interim regulatory authority
  - *Through executive order*
  - *Technical inputs from SRTU*
- Scope. Jurisdiction over
  - *Entire state* – *Bus, urban rail*
  - *Depots* – *Other co-ordination SPVs*

Regulatory activities

- Fixation of fares & fees
- Route & network design
- Route allocation & issue of permits
- Specification & enforcement of quality of service standards
- Others
  - *Data collection & management*
  - *Advise government*

Regulatory design

- Independence
  - *Transparent selection*
  - *Removal on advice of independent authority*
  - *Financial autonomy*
- Accountability
  - *Consultative process recommended*
  - *Ensure transparency in processes*
  - *Accounts audited by CAG*
  - *Publish annual report*
- Regulatory powers
  - *Powers of a civil court*

Legislative changes

- New legislation for independent regulator
- Changes in the following laws
  - *Motor Vehicles Act 1988*
  - *Road Transport Corporations Act 1950*
  - *Indian Tramways Act 1950*
  - *Indian Railways Act 1989 (?)*

Thank you

Independent regulation and government: need for harmony

S Sundar
Distinguished Fellow
Tata Energy Research Institute

December 12, 2002

Rationale for independent regulation

- Regulation represents a new division of powers
  - Policy formulation from implementation
- Created by government to rectify its own failure to
  - provide credible assurances to investors
  - protect consumers
  - improve efficiencies
  - ensure transparency

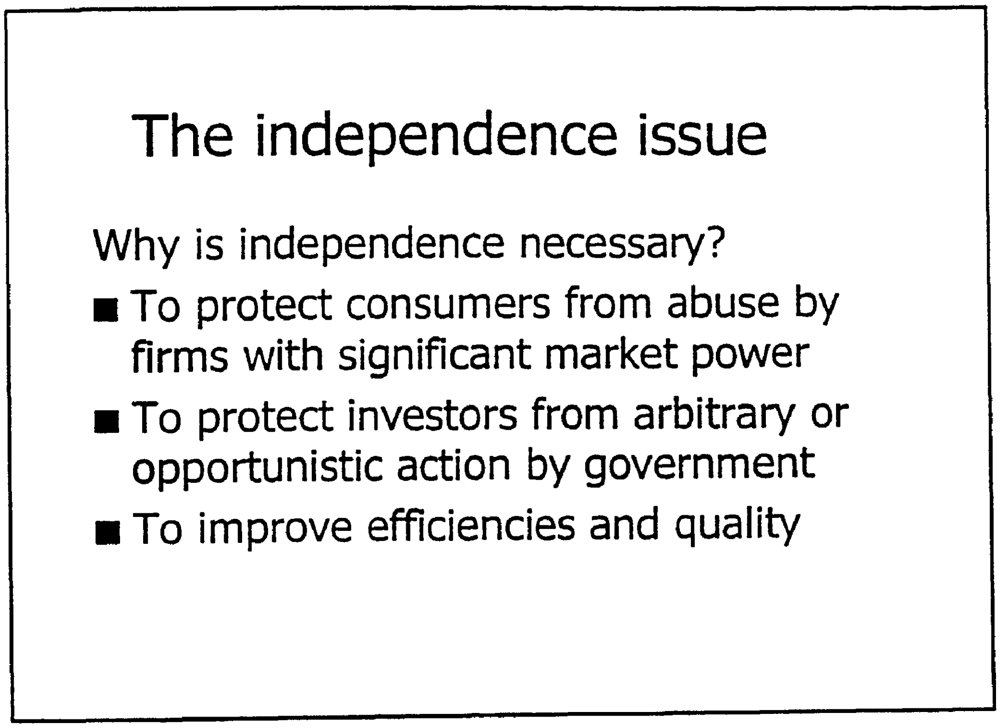
Neither fish nor fowl

- The fourth arm of the state
- Exercises powers of other three arms
- Yet different from the others

The independence issue

What is independence?

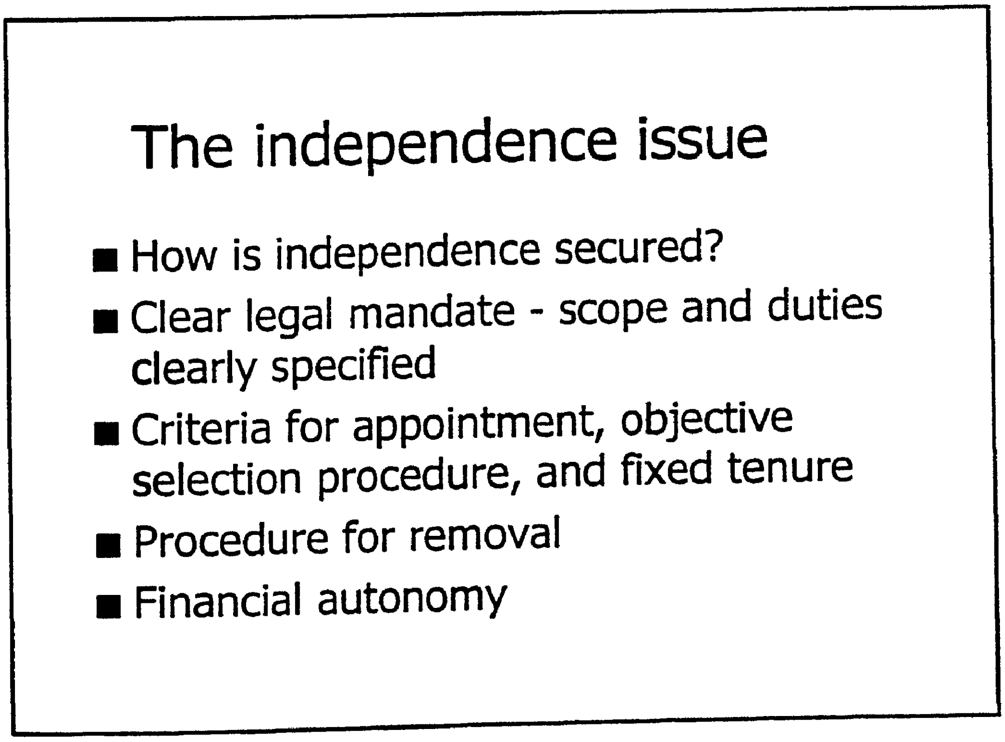
- An arm's length relationship with political authorities
- An arm's length relationship with regulated firms, other private interests and consumers
- The attributes of organizational autonomy



The independence issue

Why is independence necessary?

- To protect consumers from abuse by firms with significant market power
- To protect investors from arbitrary or opportunistic action by government
- To improve efficiencies and quality



The independence issue

- How is independence secured?
- Clear legal mandate - scope and duties clearly specified
- Criteria for appointment, objective selection procedure, and fixed tenure
- Procedure for removal
- Financial autonomy

The accountability issue

- Independence does not mean lack of accountability
- Ministerial accountability to Parliament - how does the regulator fit in
- Access to utilities - citizens rights?
- Case for accountability

Accountable to whom?

- Parliament, judiciary, and stakeholders
- And how
  - Parliamentary and external scrutiny
  - Transparency
  - Consultation
  - Judicial review

What is the regulator's mandate?

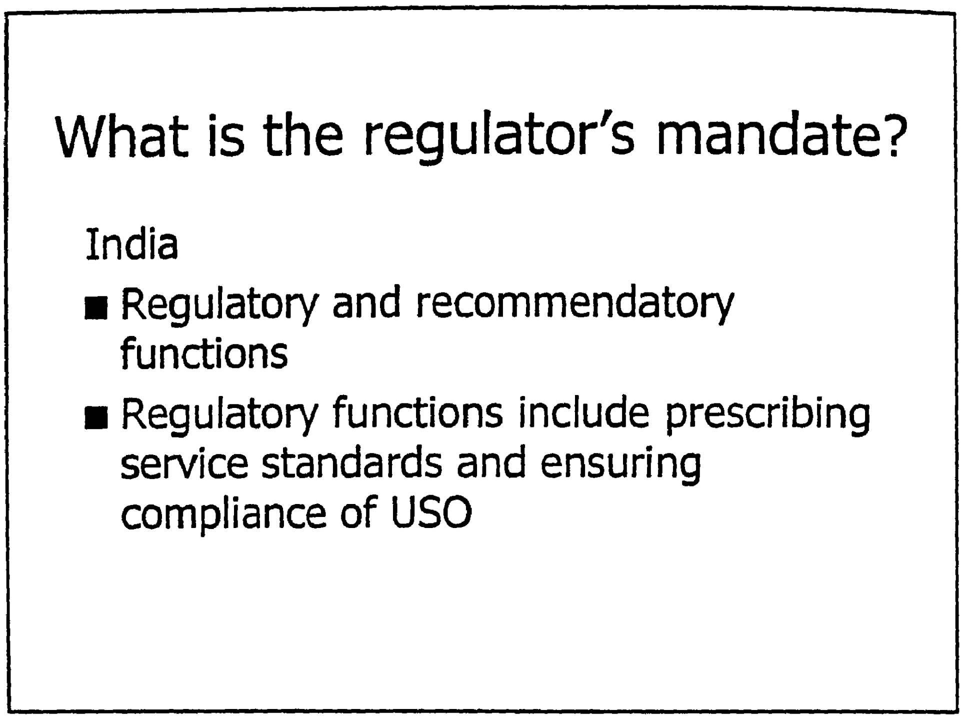
UK

- Primary: Ensure adequacy of supply; maintain supplier's ability to finance growth; promote competition
- Secondary: Protect consumer interests; promote efficiency and economy; safety and environment; and address the needs of the vulnerable

What is the regulator's mandate?

Sri Lanka

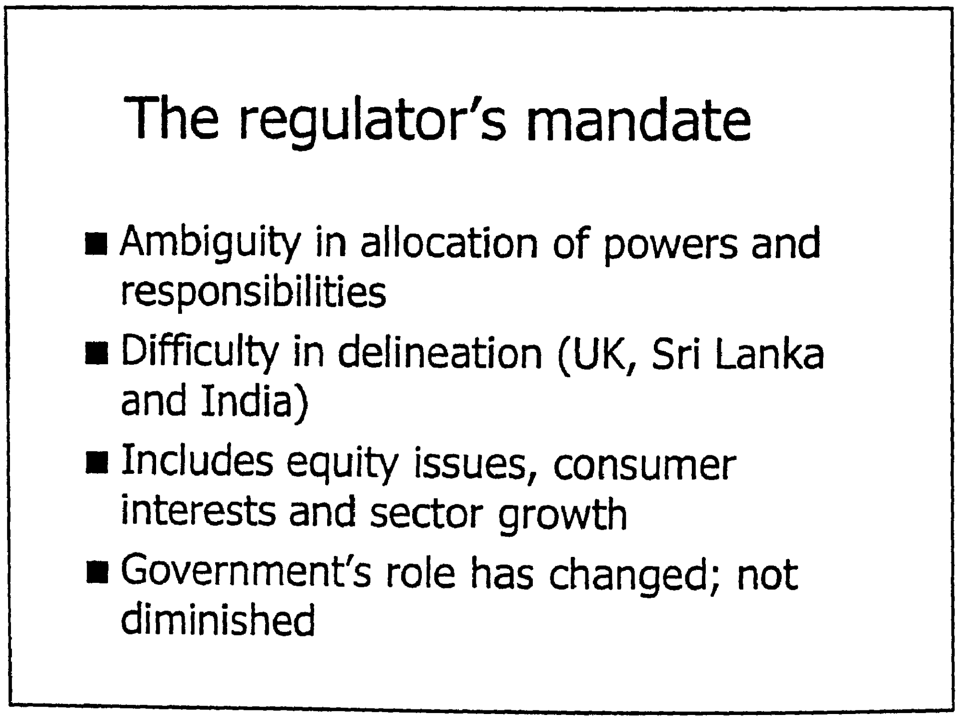
- Ensure provision of reliable and adequate telecom services
- Promote competition
- Protect consumer interests
- Promote rapid and sustained development of telecom



What is the regulator's mandate?

India

- Regulatory and recommendatory functions
- Regulatory functions include prescribing service standards and ensuring compliance of USO



The regulator's mandate

- Ambiguity in allocation of powers and responsibilities
- Difficulty in delineation (UK, Sri Lanka and India)
- Includes equity issues, consumer interests and sector growth
- Government's role has changed; not diminished

Government's interface with regulator

- Appointment of regulator
  - practices in US, UK, Sri Lanka and India
- Budget control
  - practices in USA
  - budget and expenditure approvals in India

Influence on industry structure and development

- Licensing
- Competition issues
- Mergers and takeovers
- Fuel policy, spectrum allocation etc.
- Equity issues

Power to issue directives

- Provisions in UK, Canada and India
- Directives restricted to policy issues

Rationale for directives

- Public interest and public policy
- Government best judge

Power to issue directives - not absolute

- Conform to the objectives of the legislation
- Must relate to policy
- Test of legitimate expectation
- Conform with natural justice

Should regulator be consulted?

- Practices in UK, yes and disclosed
- Canada - at two stages
- India - yes and no

Should a third party arbitrate?

- Provisions in OERA and APERA
- Is it appropriate?

- The Indian experience
- The March 1999 directive to TRAI

Green paper (1998) in UK

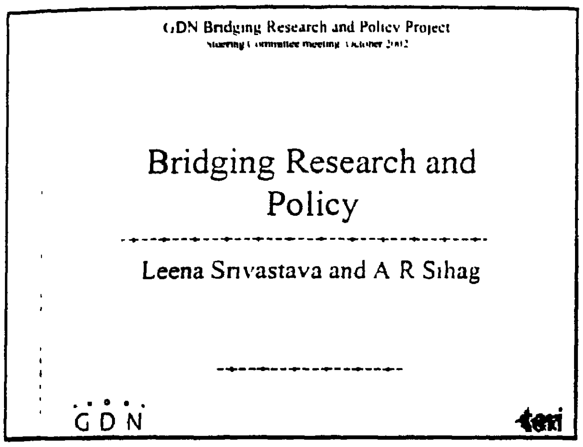
- Statutory guidance on social, welfare and environment issues
- Full consultation
- Specific legislation to implement policies with significant financial implications

Common objectives

- Sector development
- Improvements in efficiency, quality, safety and environment
- Protection of consumer interests
- USO

Need for harmony

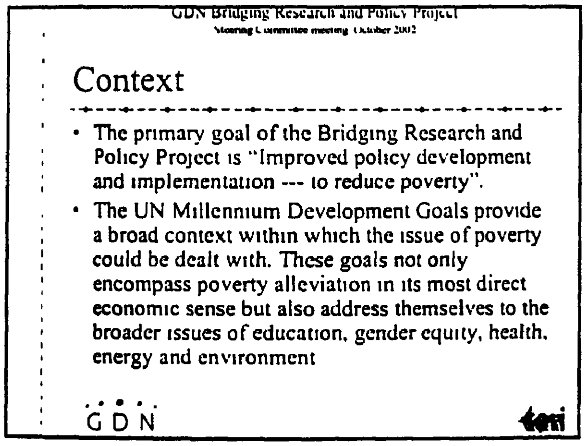
- Consult but make consultation Public
- Recognise government's concerns but act independently



GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Bridging Research and Policy

Leena Srivastava and A R Sihag

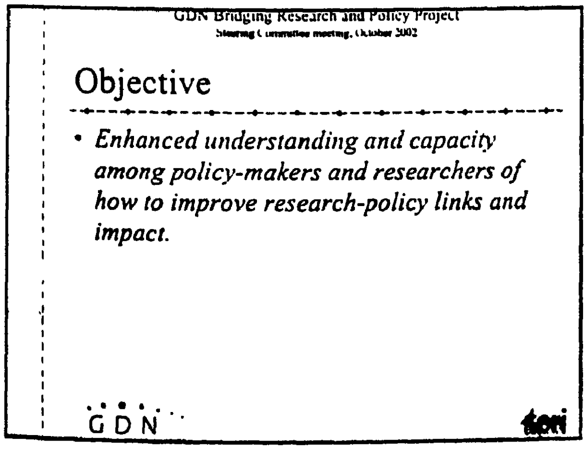


GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Context

- The primary goal of the Bridging Research and Policy Project is "Improved policy development and implementation --- to reduce poverty".
- The UN Millennium Development Goals provide a broad context within which the issue of poverty could be dealt with. These goals not only encompass poverty alleviation in its most direct economic sense but also address themselves to the broader issues of education, gender equity, health, energy and environment

teri

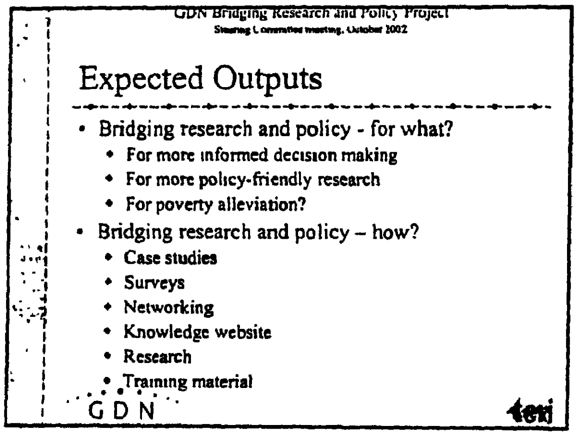


GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Objective

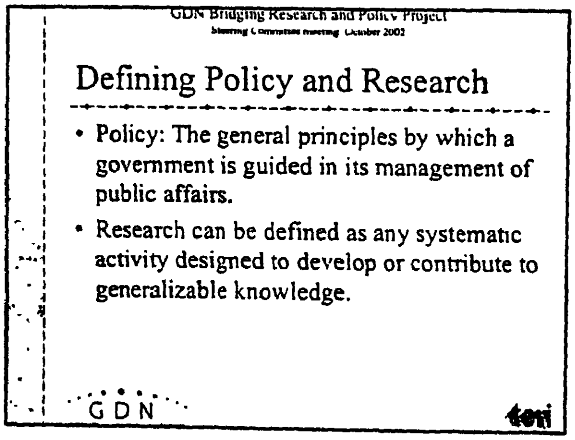
- *Enhanced understanding and capacity among policy-makers and researchers of how to improve research-policy links and impact.*

GDN
teri



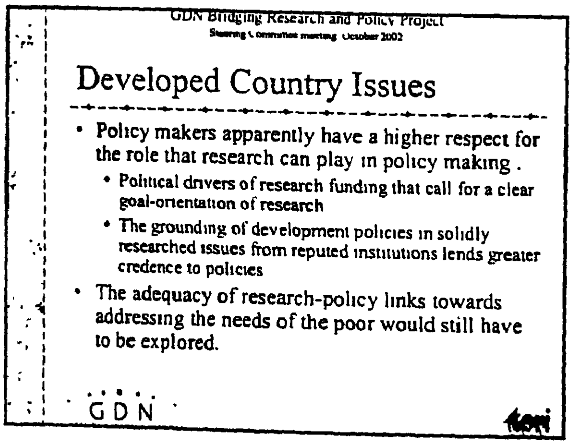
Expected Outputs

- Bridging research and policy - for what?
  - For more informed decision making
  - For more policy-friendly research
  - For poverty alleviation?
- Bridging research and policy – how?
  - Case studies
  - Surveys
  - Networking
  - Knowledge website
  - Research
  - Training material



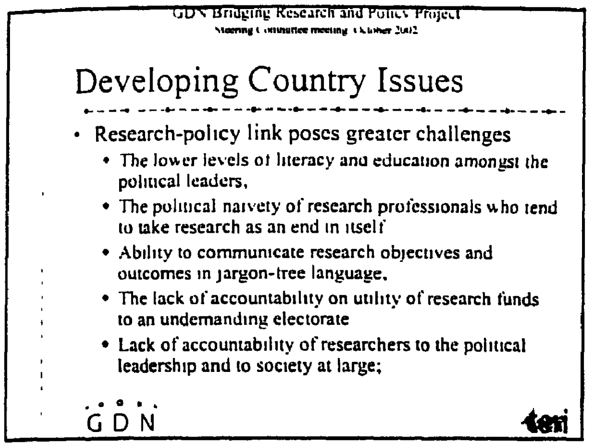
Defining Policy and Research

- Policy: The general principles by which a government is guided in its management of public affairs.
- Research can be defined as any systematic activity designed to develop or contribute to generalizable knowledge.



Developed Country Issues

- Policy makers apparently have a higher respect for the role that research can play in policy making .
  - Political drivers of research funding that call for a clear goal-orientation of research
  - The grounding of development policies in solidly researched issues from reputed institutions lends greater credence to policies
- The adequacy of research-policy links towards addressing the needs of the poor would still have to be explored.

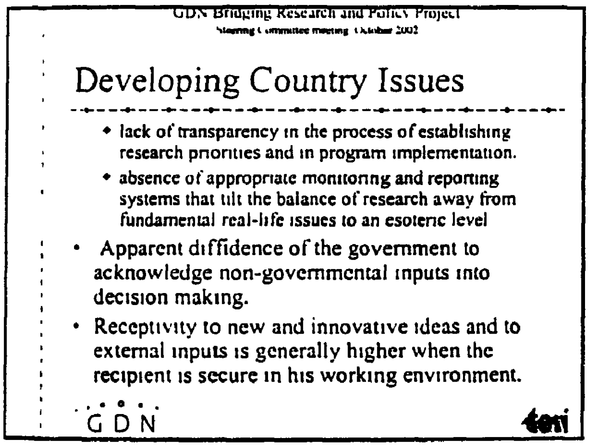


GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Developing Country Issues

- Research-policy link poses greater challenges
  - The lower levels of literacy and education amongst the political leaders,
  - The political naivety of research professionals who tend to take research as an end in itself
  - Ability to communicate research objectives and outcomes in jargon-free language.
  - The lack of accountability on utility of research funds to an undemanding electorate
  - Lack of accountability of researchers to the political leadership and to society at large;

GDN teri

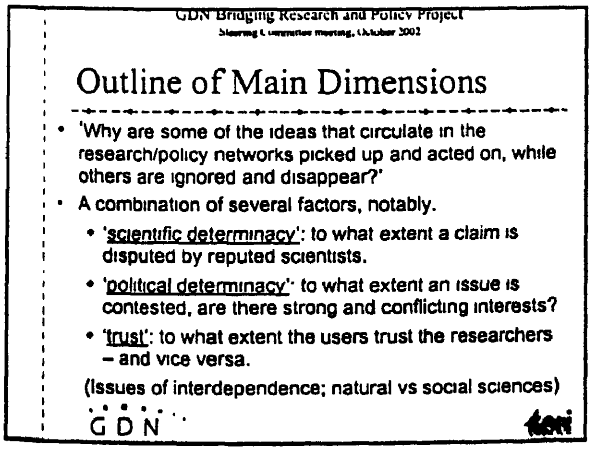


GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Developing Country Issues

  - lack of transparency in the process of establishing research priorities and in program implementation.
  - absence of appropriate monitoring and reporting systems that tilt the balance of research away from fundamental real-life issues to an esoteric level
- Apparent diffidence of the government to acknowledge non-governmental inputs into decision making.
- Receptivity to new and innovative ideas and to external inputs is generally higher when the recipient is secure in his working environment.

GDN teri



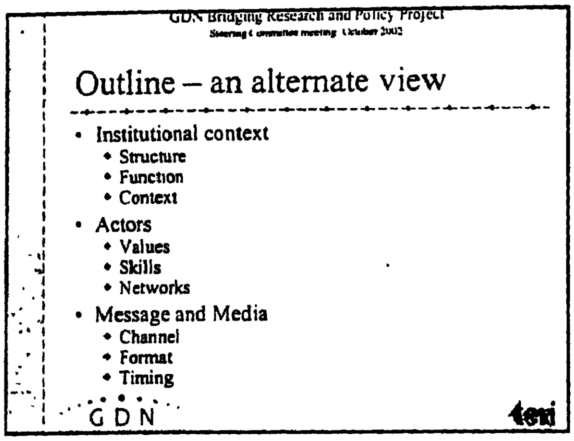
GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Outline of Main Dimensions

- 'Why are some of the ideas that circulate in the research/policy networks picked up and acted on, while others are ignored and disappear?'
- A combination of several factors, notably.
  - 'scientific determinacy': to what extent a claim is disputed by reputed scientists.
  - 'political determinacy': to what extent an issue is contested, are there strong and conflicting interests?
  - 'trust': to what extent the users trust the researchers – and vice versa.

(Issues of interdependence; natural vs social sciences)

GDN teri



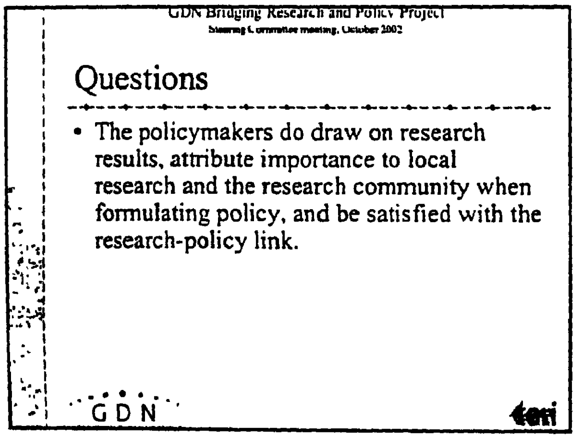
GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Outline – an alternate view

- Institutional context
  - Structure
  - Function
  - Context
- Actors
  - Values
  - Skills
  - Networks
- Message and Media
  - Channel
  - Format
  - Timing

GDN

teri



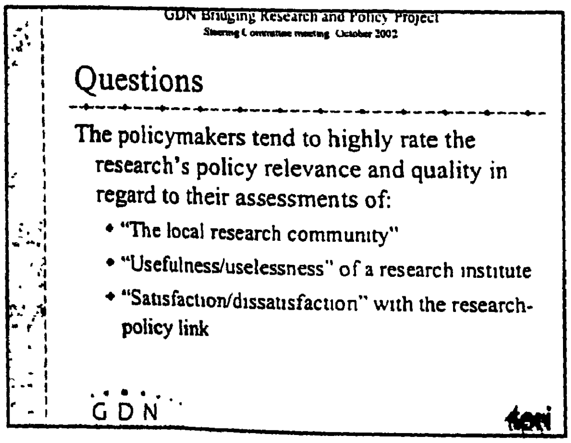
GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

Questions

- The policymakers do draw on research results, attribute importance to local research and the research community when formulating policy, and be satisfied with the research-policy link.

GDN

teri



GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

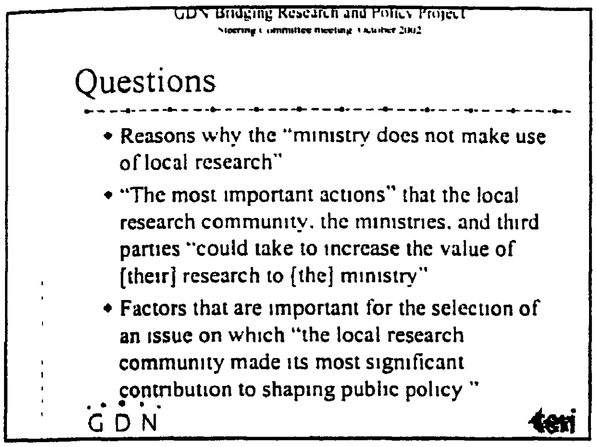
Questions

The policymakers tend to highly rate the research's policy relevance and quality in regard to their assessments of:

- "The local research community"
- "Usefulness/uselessness" of a research institute
- "Satisfaction/dissatisfaction" with the research-policy link

GDN

teri

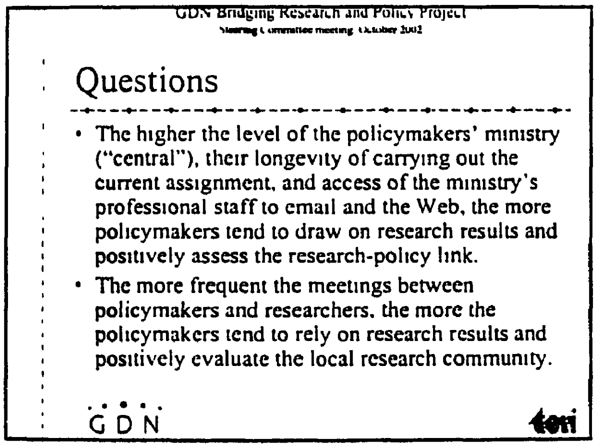


GDN Bridging Research and Policy Project
Steering Committee meeting October 2002

Questions

- Reasons why the "ministry does not make use of local research"
- "The most important actions" that the local research community, the ministries, and third parties "could take to increase the value of [their] research to [the] ministry"
- Factors that are important for the selection of an issue on which "the local research community made its most significant contribution to shaping public policy"

GDN

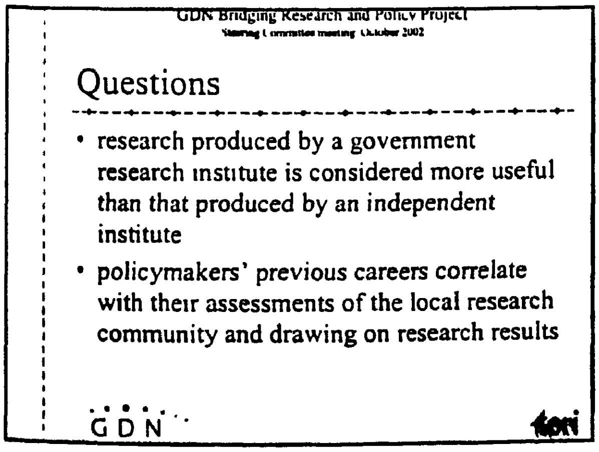


GDN Bridging Research and Policy Project
Steering Committee meeting October 2002

Questions

- The higher the level of the policymakers' ministry ("central"), their longevity of carrying out the current assignment, and access of the ministry's professional staff to email and the Web, the more policymakers tend to draw on research results and positively assess the research-policy link.
- The more frequent the meetings between policymakers and researchers, the more the policymakers tend to rely on research results and positively evaluate the local research community.

GDN

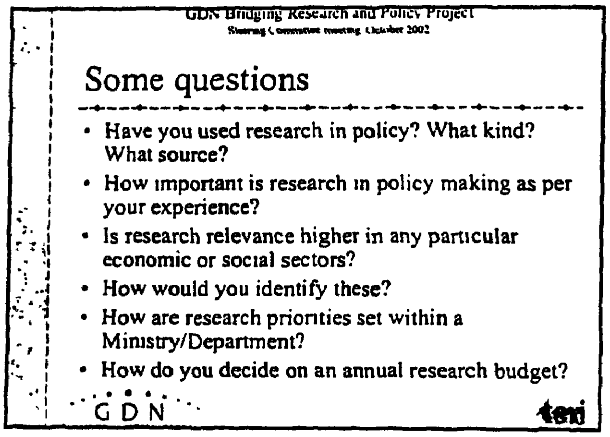


GDN Bridging Research and Policy Project
Steering Committee meeting October 2002

Questions

- research produced by a government research institute is considered more useful than that produced by an independent institute
- policymakers' previous careers correlate with their assessments of the local research community and drawing on research results

GDN



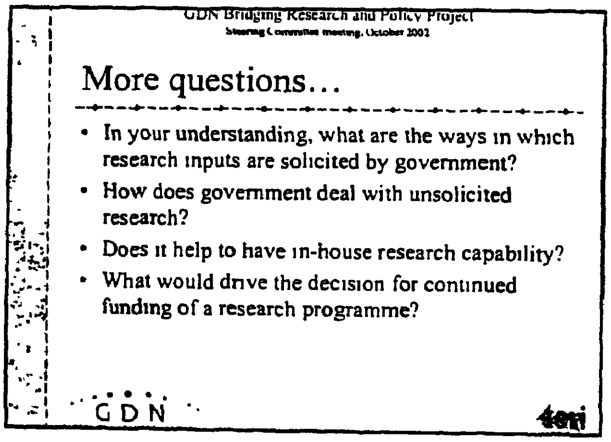
GDN Bridging Research and Policy Project
Steering Committee meeting October 2002

Some questions

- Have you used research in policy? What kind? What source?
- How important is research in policy making as per your experience?
- Is research relevance higher in any particular economic or social sectors?
- How would you identify these?
- How are research priorities set within a Ministry/Department?
- How do you decide on an annual research budget?

GDN

teri



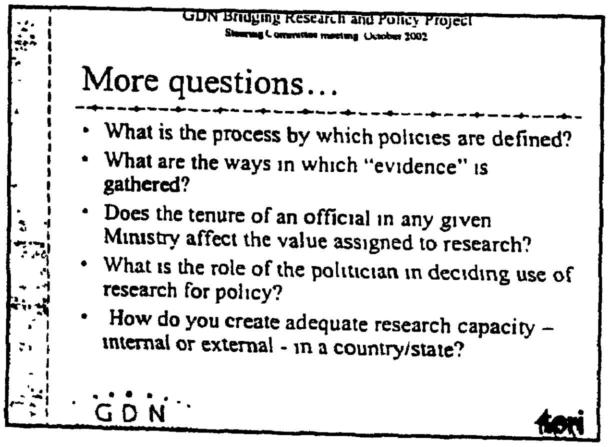
GDN Bridging Research and Policy Project
Steering Committee meeting, October 2002

More questions…

- In your understanding, what are the ways in which research inputs are solicited by government?
- How does government deal with unsolicited research?
- Does it help to have in-house research capability?
- What would drive the decision for continued funding of a research programme?

GDN

teri



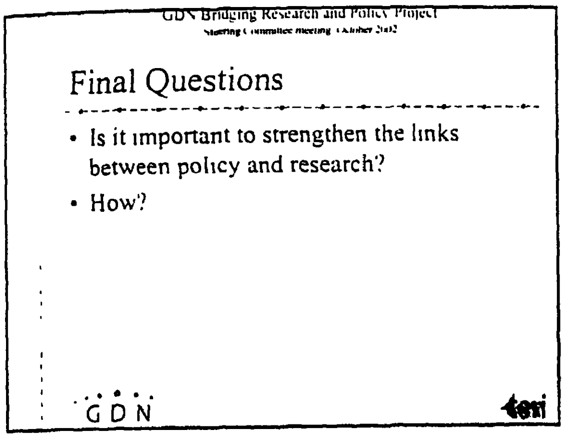
GDN Bridging Research and Policy Project
Steering Committee meeting October 2002

More questions…

- What is the process by which policies are defined?
- What are the ways in which "evidence" is gathered?
- Does the tenure of an official in any given Ministry affect the value assigned to research?
- What is the role of the politician in deciding use of research for policy?
- How do you create adequate research capacity – internal or external - in a country/state?

GDN

teri



GDN Bridging Research and Policy Project
Steering Committee meeting October 2002

Final Questions

- Is it important to strengthen the links between policy and research?
- How?

GDN

teri

GROUP - A

What was done in Orissa and the lessons from the Orissa case with special reference to:
- The role of government
- Role of funding agencies
- The role of consultants
- Choice of restructuring model
- Communication strategy
- Employment related issues

Pre-reform situation

- Increasing power shortage
- Heavy T&D losses
- Increasing burden of subsidy
- Poor power supply
- Inefficiency in management
- Problem for government to meet increasing burden for government

Reason for reform - push factor + pull factor

Reform process

- Heavy injection of borrowed fund - Rs. 2800 crore
- Huge cost of consultancy - Rs. 306 crore
- High amount of interest - Rs. 206 crore
- Total investment - Rs. 4134.8 crore

Major elements of reform process:
- Dividing a complete man into different parts
- Brain, hear and limbs working without any coordination and at different sites

Role of government

Influenced by

Push factor
- Growing revenue deficit
- Increasing demand for subsidy
- Inefficiency and poor performance of OSEB
- Process of liberalization in the nineties

Pull factor
- Attractive offer from WB, DFID, and ADB
- Support from GoI
- Opportunity to save the annual burden of subsidy to OSEB

- Overenthusiastic towards unbundling and privatisation - it became
- Hurried and berried
- Overdependence on consultant's suggestion
- Heart wanting to reform but not the brain
- Hybrid of public sector and private sector didn't succeed
- Private sector performed even badly
- Thus, theoretically role of government was path breaking, and well intended but blind following of funding agencies took them away from their actual destination

Choice of restructuring model

- Transformation process was taken up in a haste without proper perception of the outcome
- Restructuring should have done in a slow and steady manner considering the strength and weaknesses of the system
- Financial restructuring planning was as much necessary as restructuring the frame and the model failed miserably on this front

Result

Men - More
Debt trap
Vicious cycle
Unhappy marriage where divorce is not possible

Role of funding agency

- Theoretical
- Semi-dictatorial
- Not practical to ground level situation
- Thrusting international consultants and international experiments
- Planting lotus in the desert
- More concern for consultancy but less for the project and success privatization
- No plan for overcoming present crisis and future needs
- Saridon for headache arising out of pollution

Role of consultant

- Very theoretical and impractical and hasty
- Overemphasis on privatization
- No ownership of failure
- No plan for crisis management and critical situation of today
- Bidding parameters should be correctly chosen
- Data should be properly checked before starting reform/unbundling exercise (SAR - report)
- Orissa distribution area

- Low load density/less viable without subsidy vis-à-vis other areas like Delhi

Post reform situation

- All unbundled parts were rendered utterly unviable without any scope/hope of coordination (bundled OSEB had at least some coordination)
- Unbundled parts suffer from the same problems as in the pre-reform process
- Borrowed fund has become a pain in the neck for today and tomorrow
- There is further demand of Rs. 4502 crore

Strategy for future

- Ahluwalia model
- Kanungo model
- Multi model

GROUP B

Models for Privatization

Why do we privatize?

Corporatization

JV Route

Multi-shot - Single shot

Management contract (DOA - 1996) Orissa case

BPO

Strategy for privatization

Basic premise dump it in private sector. All would be fine. Old structure bulldozed

New Structure -

Premise of competition market
Pure competition

Oligopoly
Monopoly

Process of disinvestment

Why to disinvest?

Management contract?

Valuation?

Single shot
Multi stage

Investor interest

Assets ?

Rate of return?

OR

Return?

Human capital

Role of government

Reform Bill
Unbundling the monolith

OERC - Regulatory commission Independence?

Induction of private management skills

Critique : Australian Bull - consultant (Soft client)

- Estimates - methodology --??

GROUP - C

Features Special

- High T&D Losses
- Incorrect 'SAR' data

1991-98	Orissa	India
GDP	3.82 %	6 %
GDP/Capita	2.17 %	4.8 %

- First state to go for reform
- Weak/low load growth
- Less likely to be commercial
- Viable systems
- HT Load
- Price elasticity of HT Load/Crucial should have been worked out

Performance of the sector

- T&D losses high marginally down
- 5% to 10% metering increase
- Defective 5%
- Unmetered 2%
- Quality of service
  - Attending feeders - OK
  - Meter installation - Not OK
  - Some parameters - OK
  - No indicators for v, frequency
- Financial
  - HT load overestimated
  - Preference for captive not anticipated
  - Assets - revaluation of depreciated assets
  - Subsidies of Rs. 2770 crore not paid

Rural electrification

- RE (basic minimum service)
  - Government funding needed
  - Subsidy - investment
    - operation

- Position

	1997/98	1998/99	1999/2000	2000/01
Village Elec.	800	817	748	42
Pumpsets	1903	1312	1167	99

- Now discontinued/no work
- PMGY is only funding
- MPLAD - low level investment
- REPO (REPU - 4) - collectors
- To indicate investment areas
- Micro privatisation of BSES (Vill. Elec. Committees VEC)
- 4900 VLLS. Good progress

Power purchase models

- Single buyer model (SBM) has inherent limitation
- No flexibility with DISTCO to purchase cheap power
- Delhi Reform model same
- Multi-buyer model trading better
- Short/long term can be still better
- Even with SBM Orissa model could have worked
- GRIDCO crumbling due to financial problem
- Regulator can ensure power supply at proper rates

Role of government

- Initial approach - good in favour of reform
- CM/later CM supported
- No strong farm lobby (Rs. 300 crore)
- SAR - not done good job
- Approach good - consultants in all areas
- Winning over stakeholders in reform - OK
- Good comfort to workers
- Rs. 2770 crore not paid for re-subsidy
- Financial weak position of state should have support
- ED DISTCO's/ subsidied consumers
- GRIDCO, A PSU, bearing all risks ... a mistake?
- (e.g. 'AES' just withdrew despite pending dues)
- Government should restructure and reform its undertakings before handing over to private sector. Privatization is no solution to structural problems

Role of regulator

- Year to year tariff not workable for long term stability
- Power tariff increased 15% per annum for 3 years. High increase
- Shifted HT load to captive
- Revaluation of depreciated assets increased tariff
- No study of demand - tariff available
- Tariff based on capital base (Sixth Schedule) ES Act 48
- Regulator should have done multi-year regulation tariffs

Issues in distribution management

- Financial unviable rural/RE not compensated
- Corpus of Fund (unlike Delhi) not given to DISTCO's
- SAR - World Bank benchmarks incorrect
- Employees on deputation to GRIDCO from government difficult to build incentives
- Low growth low
  - HT↓
  - LT↑
  - Captive ↑
- Private management should bring investment and skills

Balance sheet restructuring

Valuation
Creative accounting
Finance statement conceal more and reveal less

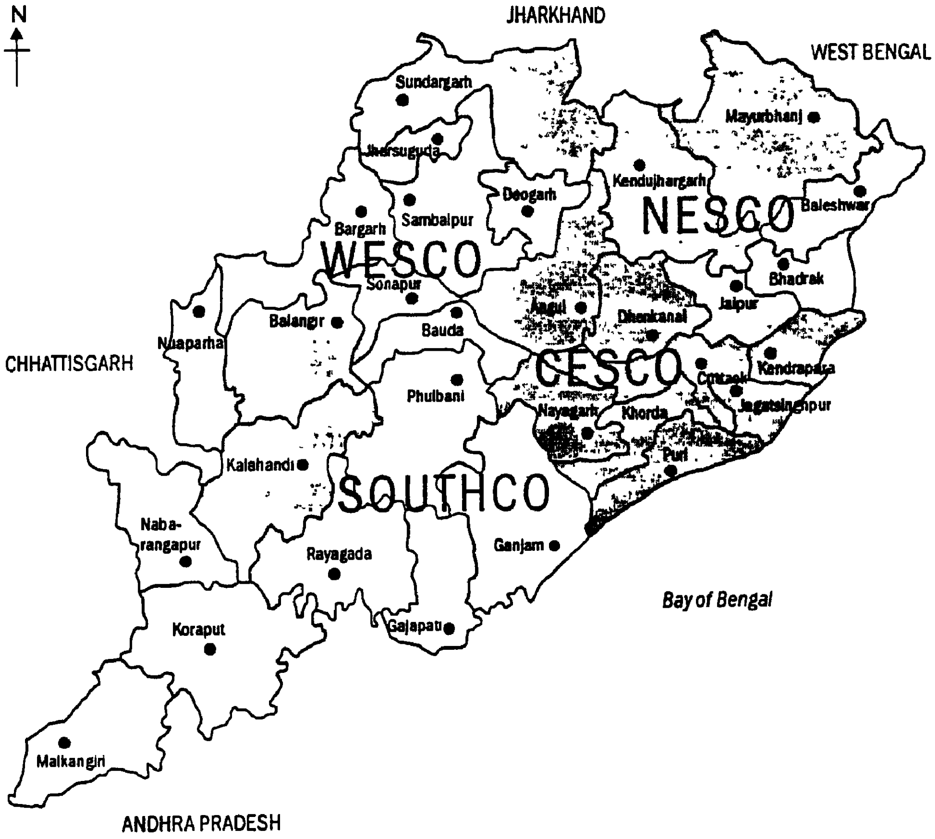
Economic value -----?? Remains the same
Figure - disfigure - refigure does not lead us anywhere
Good corporate governance (?) that we advocate and restructure
Balance sheet to make it opaque
How do we conceal?
Securitisation - capitalization
Receivables?
Payables?

Orissa Case Study

teri

Privatisation of Electricity Distribution in Orissa

A Case Study



Prepared for

Department of Personnel and Training, GoI

by

Division of Regulatory Studies and Governance

TERI

September 2002

Acknowledgements

We gratefully acknowledge the cooperation and support received from a number of individuals and organizations including the Chairman, members, and other staff of OERC, representing CII in Bhubaneshwar by providing useful documentation on various events relating to the power sector reforms in Orissa.

We would also like to place on record the valuable inputs received from Mr M Y Rao, Former Chairman, GRIDCO, and Mr D K Roy, Former Chairman, OERC during the discussions we had with them.

We deeply appreciate the expert views received from Dr Leena Srivastava, Director, Division of Regulatory Studies and Governance, TERI, Dr. S K Sarkar and Mr Rakesh Kacker, Senior Fellows of TERI, and other colleagues.

Finally, and most importantly, we would like to thank the Department of Personnel and Training, Government of India, for its support in funding the study.

Project team

- Mr K Ramanathan, *Senior Fellow*
- Dr A R Sihag, IAS, *Senior Fellow*
- Mr Shahid Hasan, *Fellow*

Contents

1. Introduction 1
2. The context of reform 2
3. Preparatory work for reform implementation.. 6
4. Reform blueprint 9
5. Unbundling and corporatisaton of OSEB...17
6. Management contract...22
7. Process of disinvestment 25
8. Post-privatization scenario 31
9. Views on the outcome of reforms 43

Annexure

Annexure A: Provisional opening balance sheet of DISTCOs (31/3/99) 45
Annexure B: Balance sheet of DISTCOs (31/3/2002)46
Annexure C: Zone-wise statistics as given in Information Memorandum 50
Annexure D: Quality of service in the DISTCOs during 1999-2000 & 2000-01 . 53
Annexure E: Exit of AES consortium from CESCO management.......................54
Annexure F: International experience in distribution privatization.......................56
Annexure G: The Kanungo Committee Report: summary of findings and recommendations 60
Annexure H: Chronology of events in Orissa power sector reforms...................69

1 Introduction

Since the late eighties the power supply industry in many parts of the world has been going through reforms, resulting in radical changes to its structure as well as the regulatory set-up. In India the process started in the early nineties. Orissa was the first state to initiate a comprehensive reform programme in the country. Its main components were:

- Establishment of an independent electricity regulatory commission.
- Structural unbundling of the OSEB (Orissa State Electricity Board) into separate corporations for generation, transmission, and distribution.
- Private sector participation in hydro generation and transmission.
- Privatization of thermal generation and distribution.
- A cost-related tariff regime.

Distribution privatization was a critical element of the reform programme and its success would determine whether the sector became self-sustainable. Also, this was the first time a state-owned electricity industry was being restructured in India or South Asia.

This case study reports the distribution privatization experience in Orissa starting with the context of reform right up to the process and strategy for privatization, and including the post- privatization experience. A gist of the views expressed by different committees in recent years on the outcome of the reforms and some issues of interest arising from this case study are also presented.

2 The context of reform

In the early nineties the Government of Orissa (GoO) was in a poor financial condition. The financial health of the state had eroded as a result of increased revenue expenditure since 1982/83. The revenue deficit in 1991/92 stood at 187.71 crore rupees against a surplus of 27.98 crore rupees in the year 1981/82 (www.orissagov.com). The state was finding it increasingly difficult to support socio-economic and infrastructure development activities. The per capita net SDP was the second lowest in the country and 48.56% of the population (compared to a national average of 35.97%) lived the below poverty line.

The development of the state's power sector which was totally owned by the government was also getting affected. The installed generating capacity in the state in 1991/92 was 1612 MW (an increase of 4.55% during the past decade) (CMIE 2002) but this was insufficient to meet the demand. The State had a peak deficit of 23.9% and an energy deficit of 7% (Planning Commission 2001). The corresponding deficits at the national level during this time were 18.8% and 7.8%.

The average plant load factor of its generating stations hovered around just 30% compared with a national average of 55.3% in 1991/92. It further declined to 29% in 1994/95 when the national average was 60%. The reported transmission and distribution losses in the state were about 25.3% (an increase of 6% compared to 1980/81) as against 22.8% losses at the national level (Planning Commission 1997).

The financial performance of the OSEB (Orissa State Electricity Board), the utility responsible for power sector development in the state (see Box 1), was on the decline. The Board was also becoming increasingly dependent on government subsidies; in fact, it was the largest recipient of subsidies amongst all public sector undertakings in the state. Despite that, it was not earning the statutory 3% return on net fixed assets. Without a subsidy the return was –87% (certainly better than the national average of –12.7%. Thus eventhough it depended heavily on government subsidies, the government was finding it increasingly difficult to provide them because of its poor financial conditions.

Meanwhile, the gap between average cost of supply and average tariff was also increasing. It had increased from 8 paise in 1989/90 to 18 paise in 1991/92 (World Bank 1996; OSEB Annual Reports 1990-94). This was despite the fact that agricultural consumption constituted only around 4% of the total in Orissa. Further, a large portion of the billing was being based on average consumption and load factor in the absence of metering. The OSEB was also relatively overstaffed. (Number of employees per million units of energy sold was 6.2 compared to a national average of 4.5) (Planning Commission 1999; CEA 2000; CMIE 2002).

Box 1 Structure of power supply industry in Orissa

The OSEB established by the GoO in 1961 under the provisions of the Electricity (Supply) Act 1948 was responsible for rational development of the power sector in the state. It was a statutory organization, but was to be guided by such directions on questions of policy would be given to it by the government. In case of dispute the matter was to be referred to the CEA (Central Electricity Authority). The OSEB depended entirely on state government loans so the government had considerable operational control over its functioning. This extended to matters of tariff also.

The organizational structure of the electricity supply industry differed from that in most other states. The OSEB was responsible for all transmission and distribution, but the DoE (Department of Energy) owned some hydro power generating stations. The OPGC (Orissa Power Generation Corporation) created in 1984 was responsible for constructing and operating thermal power plants in the state.

The OSEB was a member constituent of the EREB (Eastern Region Electricity Board) and its transmission system was connected to the power systems of West Bengal and Bihar. It also had radial transmission links to Andhra Pradesh and Madhya Pradesh.

In the early nineties, economic policies were getting liberalized in the country. Infrastructure reform programmes were aimed at reducing the fiscal deficit through a reduction in subsidies, technical gains to suppliers through efficiency enhancement, and gains to consumers through improvements in the quality of supply, and a reduction in the cost of services, or both (World Bank 1994). Of all these, the objective of limiting the fiscal deficit was the uppermost. Efficiency improvements were sought through commercialization, corporatization and gradual privatization of service providers. Privatization was considered necessary, as there was a general perception that improvements in public sector management were unlikely to provide adequate results (ADB, NCAER 1999). Also, over the years tariff decisions in the states had become increasingly subjected to compulsions of political populism with financial viability of SEBs not receiving due attention [9]. It was thought that consumers would benefit from tariff rationalization and improved supply and service.

Realizing these and the fact that the power supply conditions were deteriorating in other parts of the country as well, the GoI took the initiative of bringing about changes in the structure and regulatory set up. The first such step was opening up the generation business (on a standalone basis) to the private sector. However, it was soon realized that more comprehensive reforms were needed and the states should be their catalysts. GoI also strived for some national level consensus and so the reform climate in the country was tuned to structural and regulatory changes in the power supply industry.

Meanwhile, the World Bank (which was funding the power sector in many developing countries including India) become increasingly concerned about the poor performance of the utilities. It had suspended the disbursement of loans to Delhi, Uttar Pradesh, Karnataka, and Kerala and threatened suspension to some other states. The Bank was forced to review its funding policy based on this experience, with a focus on developmental process and improving the access to electricity. As a result, a new set of policies for power sector lending was formulated in 1993 by the Bank, according to which it would extend financial support to only those utilities which functioned on commercial lines or which were committed to improving the performance of the power sector through reform. These principles which would govern the World Bank's policy for involvement in the Indian power sector were formally announced in October 1993 at a conference in Jaipur. [see Box: 2].

Box 2 Guiding principles of the World Bank for funding the power sector

- Structural reforms involving dismantling of vertically integrated monolith organizations such as SEBs into separate entities dedicated to generation, transmission and distribution and the corporatisation of such entities.
- Electricity pricing to reflect the cost of supply. The subsidy to any particular group to be targeted and provided for by the government in a clear and transparent manner.
- Creation of independent regulatory body to regulate the electricity sector and to insulate tariff setting from political pressures and provide a measure of comfort to private investors.
- Induct private sector management skills and encourage private investment in the sector in the context of reduced availability of funds from governmental sources.

It was also around this time that the World Bank cancelled its loan to the DoE of GoO for the Upper Indravati hydroelectric project because of the slow progress.

In view of four factors — the poor socio-economic conditions in the state, the government's lack of finances to support power development programmes, the deteriorating performance of the power sector, and the World Bank's funding conditions of the World Bank, the GoO decided to implement comprehensive reforms. In November 1993 the Chief Minister of Orissa confirmed the government's commitment to implement a comprehensive reform package. The reforms programme was also reviewed and approved by the Council of Ministers in April 1994. The key drivers of this reform programme were:

The government expected that the reforms programme would enable Orissa to establish and develop a viable power industry and reduce its budgetary burden. The OSEB expected that this would cause a turnaround for the sector; but would not adversely affect career prospects, consumer expectation related to better quality of supply and service. The industrial consumers expected a more rationalized tariff structure and a reduction in the burden of their cross subsidy. The potential investors expected a more level playing field with the regulator in position. The government entered into a formal agreement with the World Bank in September 1994 to implement a reform programme as envisaged above. The GoI also supported their reforms.

3 Preparatory work for reform implementation

Following the agreement with the World Bank, it was decided to appoint a multidisciplinary team of foreign and Indian consultants to assist the government. The international consultants led by KPMG were in the areas of management, economics, legal and regulatory issues and engineering.

Table 1 Name of international consultants

e of the firm	Area
G Peat Marwick, London	nagement consultants
onal Economic Research Associates Inc (NERA), USA	onomic Management
enna and Co, London	al Management.
enco Agra Inc. Canada	gineering Management

An equivalent of US$ 63 million dollars was available from various funding agencies including the World Bank and the ODA (now DFID) to meet the consultancy expenses.

As a first step, nine working groups were set up. These Working Groups were to study different aspects of the power sector reforms, identify basic strategies adopted and make suitable recommendations by February 1995 (see Box 3).

A Steering Committee comprising Secretaries to the GoO from the ministries of Energy, Finance, and Law, the Chairman of the OSEB, and the Reform Project Director was to guide these Working Groups. A Reform Directorate was also created under a senior Chief Engineer supported by other staff for day-to-day monitoring of power sector reform activities. A special Task Force was also set up under the chairmanship of the Secretary (Energy) to oversee the working of the above directorate and to provide necessary guidance to the Working Groups.

The Working Groups consisted of international consultants, local consultants (many of them retired Chief Engineers of OSEB) and serving officers of OSEB / state government. This composition ensured that the Working Groups had access to relevant documents and that their recommendations were based on a thorough knowledge of the ground realities — legal, administrative, political, and social.

Box 3 Function of Working Groups

Planning	Identify planning responsibilities of each entity and coordinating agency for interfacing with neighbouring utilities and the central planning process; draft information requirements from generators and distributors for planning; define system design criteria.
Metering	Finalize needs and specifications of meters at the interface points.
Commercial, Financial, and Asset Valuation	Prepare asset register with a view to fixing their values at the time of transfer from OSEB to its successor entities; work on capital structure of these entities and their cash flows.
Power Purchase Agreements	Draft power sales contract from generators to transmission company and from the latter to distribution companies.
Tariff	Look into various aspects of bulk and retail tariff and recommend changes in the level and structure; provide inputs on tariff for trading with neighbouring utilities.
Technical Interface	Map interface points between the transmission and distribution entities.
Legal and Regulation	Review existing legislations and draft a Reform Act.
Distribution	Make recommendations on splitting the distribution into zones
Human Resource Development	Identify manpower and training requirements; make recommendations on funds required for meeting terminal liabilities like pension, provident fund, gratuity etc. in the context of the reforms programme; formulate a VRS (voluntary retirement scheme)

Simultaneously a communications strategy aimed at winning over the stakeholders to the cause of reforms was also launched. At the very start, consultants made several presentations to the chief minister, groups of ministers and senior officers of the OSEB /state government to explain to them the need for and the scope of the reforms. Consultations were also carried out through a council that included the state government, the electricity board, and consumer groups.

The first step in spreading the message of reform among the employees of OSEB was taken in January 1995 with a four-day workshop organized in the state capital, Bhubaneshwar. Officers of the rank of superintending engineer and above, most of them deputed to the OSEB from the state government, participated. This was followed by separate workshops for unionized employees. The main purpose of these workshops was to emphasize the following:

- The reforms are driven by the needs of the utility and the consumers, and are not dictated to by any external agency. The Working Groups, in fact, comprised local experts, with foreign consultants providing assistance.
- Even senior officers of the Board did not have a clear idea of the OSEB's deteriorating finances. It was imperative that the true state of the finances of the Board be revealed to the participants to make them aware of the urgency and a willingness to change.
- The reforms should start at the top, with the senior officers, as agents of change, agreeing to a set of common goals and a time bound programme to achieve them.
- There would be no retrenchment (compulsory redundancy) under any circumstances.
- Preference/willingness of employees to join the successor entities of OSEB would be obtained before they were assigned to new entities.
- The employee entitlement on account of salary allowances, leave holidays, seniority, and terminal benefits such as pension, provident fund, gratuity etc. would be fully protected.
- Officers' Service Regulations for the successor entities would be framed in consultation with officers and circulated to them to help them indicate their preferences. For non-executives, all earlier wage agreements would be honoured by the new entities.

Similar workshops were thereafter held with employees in different circles and divisions. Predictably, the discussions started off on a note of suspicion and hostility, but by the time they ended, there was a grudging admission that there was a need for reforms, but nothing should be done without consulting and involving the employees at every stage.

Efforts were also made to reach out to the consumers through newspapers and television. The Chief Minister at the time, Biju Patnaik who flagged off the reforms and his successor, J B Patnaik were also fully supportive. Biju Patnaik was the first to hammer home to the legislators and to consumers that electricity costs money and has to be paid for by those who use it. There was nothing apologetic about their stand. During the debates on the Orissa Electricity Reform Bill in the Assembly, Chief Minister J B Patnaik reinforced the message of reform. There was no strong farm lobby in Orissa.

4 Reform blue print

Based on inputs from the Working Groups, the GoO finalized the blue print for the reform programme. It's key features related to establishment of a regulatory commission, restructuring of the OSEB, privatization strategy, competition, and tariff reforms. The same was also communicated to the World Bank along with an expression of the government's commitment.

Establishment of the OERC (Orissa Electricity Regulatory Commission)

The regulatory commission was to be a multi-member body, with one of the members functioning as chairperson. The qualifications and appointment procedures and the conditions of appointment were specified in the legislations to ensure the selection of qualified persons. The OERC was required to work at 'arms length' from the government in a transparent and accountable manner. The functions and powers of the proposed commission included:

- Setting retail tariffs for the distribution companies and the bulk supply and
- transmission tariffs of GRIDCO;
- Setting related performance standards in the supply of electricity;
- Setting performance standards in the promotion of efficient use of
- electricity by consumers to be achieved by licencees;
- Settlement of certain disputes between licencees and consumers;
- Advice to GoO in matters concerning generation, transmission, distribution,
- and supply of electricity in the state;
- Issue of licence to those engaged in transmission, distributions, and supply.
- Regulating the working of licencees;
- Creation of environment for private sector participation and,
- Promotion of competition.

The proceedings of the commission were deemed to be quasi-judicial.

Restructuring of the OSEB

The power supply industry can be restructured in a number of ways (Fig 1)(MOP 2002). A combination of these models could also be evolved. These differ from each other from the point of view of government control, extent of private sector participation, functional grouping, and level of competition. In the case of Orissa, the structure was primarily guided, by the 1993 policy guidelines of the World Bank loans to utilities.

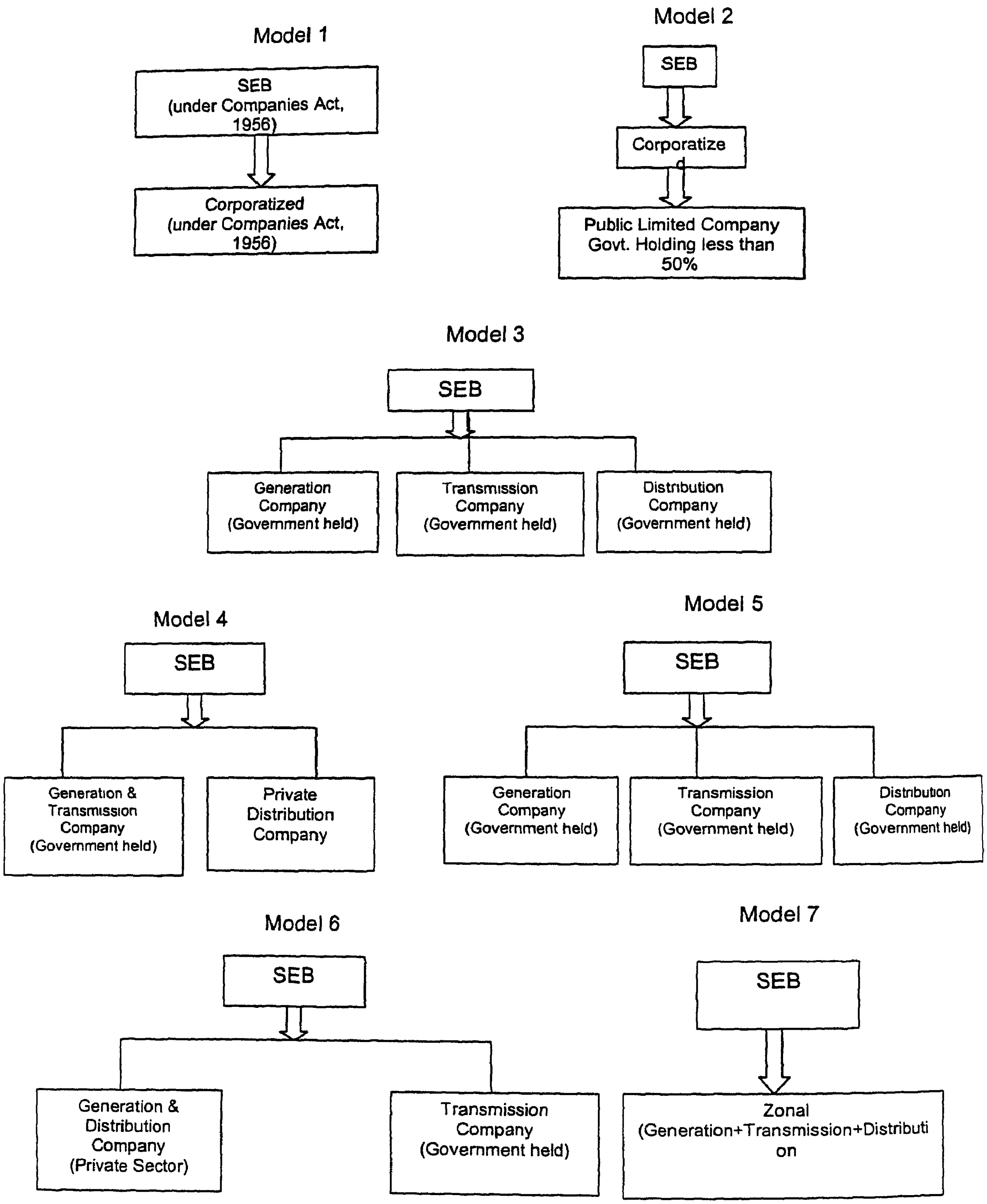

Model 1
SEB (under Companies Act, 1956)
Corporatized (under Companies Act, 1956)
Model 2
SEB
Corporatized
Public Limited Company Govt. Holding less than 50%
Model 3
SEB
Generation Company (Government held)
Transmission Company (Government held)
Distribution Company (Government held)
Model 4
SEB
Generation & Transmission Company (Government held)
Private Distribution Company
Model 5
SEB
Generation Company (Government held)
Transmission Company (Government held)
Distribution Company (Government held)
Model 6
SEB
Generation & Distribution Company (Private Sector)
Transmission Company (Government held)
Model 7
SEB
Zonal (Generation+Transmission+Distribution

Figure 1 Generic models for restructuring power supply industry

Accordingly, the generation, transmission, and distribution functions of the OSEB were to be unbundled and, to start with, corporatized. It was proposed that the transmission and distribution functions would be performed by one corporation, the GRIDCO. The distribution business was then to be demarcated into four zones and separate corporations created as subsidiaries of GRIDCO. The decisions on zoning was based on detailed studies carried out by the Working Group on Distribution, on the size, configuration, present and anticipated sales, and consumer mix, likely revenue streams, etc.

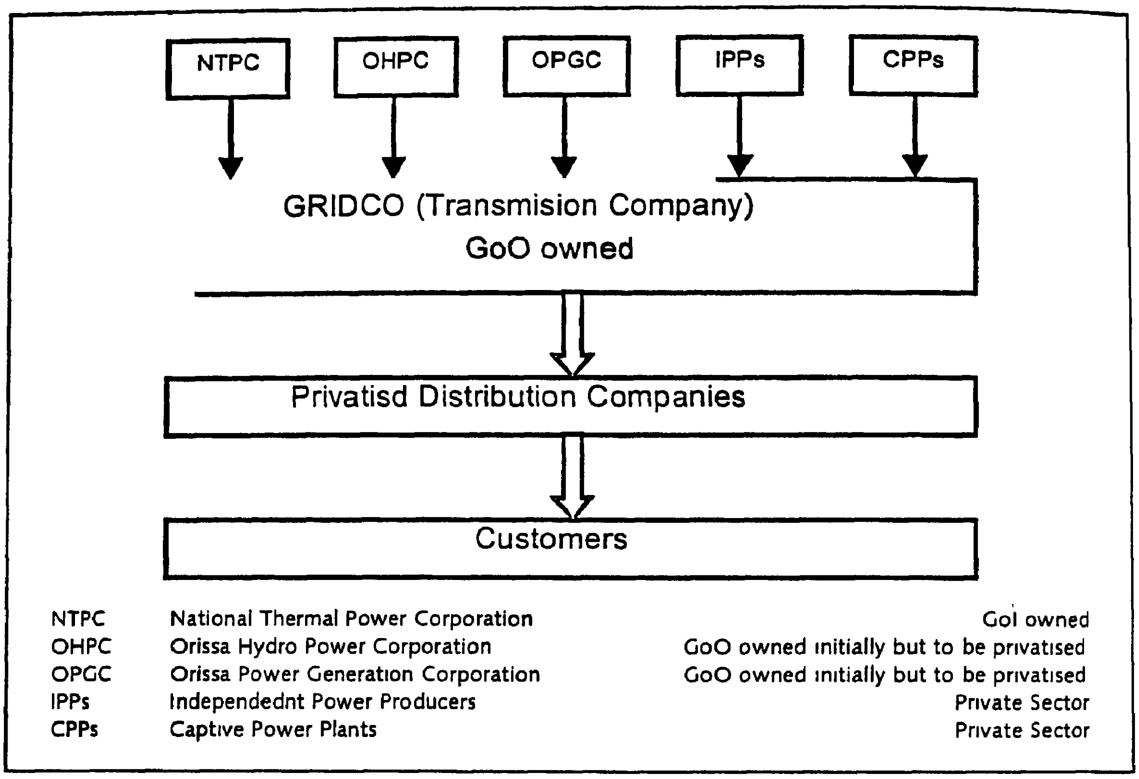
The outcome of the studies is shown in Table 2. Each zone comprises between 4000 to 5000 staff with the exception of Central Zone, which has approximately 8500 staff. There was near uniformity in the salient features of all zones except the Central. The structure of each zone is similar with each comprising 2 to 3 circles with 3 to 7 Divisions, each of which has 2 to 6 Sub-Divisions. These in turn are sub-divided into a number of Sections which would typically cater to 3000 to 4000 consumers in urban areas and 1600–2000 in rural areas.

Table 2 Key statistics of each zone

	Western	**N. Eastern**	**Southern**	**Central**
Population as per 1991 census ('000)	7579	7410	7035	9636
Consumers ('000)	257	214	290	452
Area ('000 sq km)	48	28	47	29
Consumers as a % of population (%)	3.4	2.9	4.1	4.7
Technical losses (%) (97/98)	17.1	19.6	19.3	16.9
Non-technical loss (%) (97/98)	22.6	23.2	20.2	31.6
Employees (1 January 1998)	5572	4610	5013	8820
Km network as of 31st March 1997 ('000)	30.1	26.3	23.6	28.3
Electricity sales (Gwh)	1557	1149	882	1851
Electricity sales/population (GWh)	0.21	0.16	0.13	0.19

Source: Privatization of Electricity Distribution in Orissa, India, Information Memorandum

These corporations were later to be privatized. The industry structure as per this blueprint is shown in Figure 2.


NTPC
OHPC
OPGC
IPPs
CPPs
GRIDCO (Transmision Company)
GoO owned
Privatisd Distribution Companies
Customers

NTPC	National Thermal Power Corporation	GoI owned
OHPC	Orissa Hydro Power Corporation	GoO owned initially but to be privatised
OPGC	Orissa Power Generation Corporation	GoO owned initially but to be privatised
IPPs	Independednt Power Producers	Private Sector
CPPs	Captive Power Plants	Private Sector

Figure 2 Blueprint for power supply industry structure in Orissa

Privatization of distribution

The following options were considered for privatization of the four distribution zones.

Trade sale:
It is an outright sale of the assets to a company in the same trade. An outright sale is the easiest method of transferring management responsibility into the hands of the private investor. There is however, the possibility of public criticism that GRIDCO has 'sold off the family silver'. The fear that GRIDCO would retain neither the means for ensuring effective performance from the private sector nor the ability to prevent the disposal of the business or the assets eventually ruled out this mode of privatization.

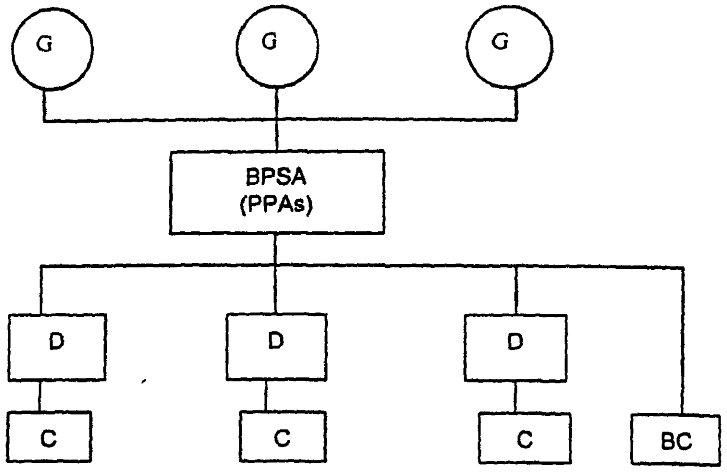
Public placement or floatation
While this is similar to an outright sale, the difference is that the shares in the distribution companies are sold through open offer, which is not restricted to parties already in the same trade. Most of the perceived advantages of a Trade Sale would apply in this case also but uncertainties and difficulties in the structuring of a deal, which would attract private investors, ruled out this mode.

Long-term lease

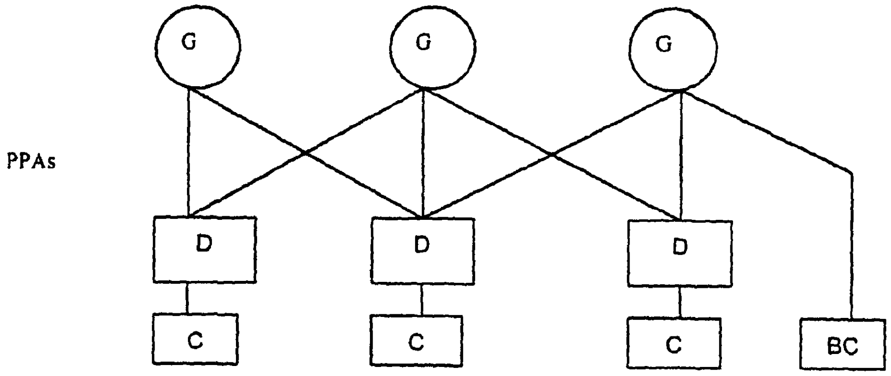
This is a lease for 25 to 99 years terminable in the event of default, insolvency or non-performance. The lessee gets operational control of the assets for which he may pay a consideration in one or more installments. The leased assets would revert back on expiry of the term. The perceived disadvantage of this mode is that the risk of running the enterprise is not transferred to the lessee. There is also uncertainty about the lessee's control over the staff. This mode also was hence found unacceptable.

Long-term concession

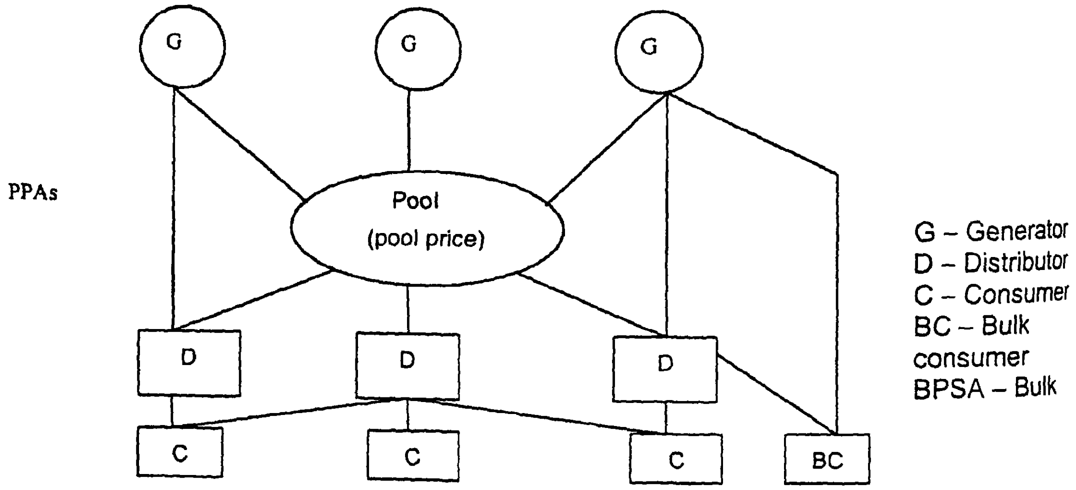
This is a concession for a period of 30–40 years. The consideration amount will be paid through premium and rental payments. As in the case of a long-term lease, there is termination in the event of default, insolvency or non-performance of the concessionaire. The perceived disadvantages are that the fixed term of the concession will give no incentive to make investments; there are not enough safeguards to protect the interests of GRIDCO in the event of the concessionaire abandoning the business.



Single buyer



Multi buyer



Power pool

Fig 3: Generic power purchase models

Management contract
Under a management contract, the ownership of the assets remains with GRIDCO but the management of the company is contracted out to a party chosen through open tender. GRIDCO would continue to be responsible for making investments. The obvious disadvantages are several. There is no transfer of risk to the management contractor. The contractor's control over the staff placed at his disposal is questionable. The contractor has no responsibility for any investment.

Joint venture
Selling 51% of GRIDCO's shareholding in the distribution company to a private investor selected through competitive bidding. The private investor would be fully responsible for investments as well as for managing the distribution business. The majority shareholder would have full control over staff employed by the company. GRIDCO would retain 49% of the shareholding out of which 10% would be given to employees' shareholding trusts, who are also entitled to have a representative on the Board of the company. This would give a measure of comfort to the state government and employees — in the event of non-performance or malpractices such as asset-stripping by the majority shareholder, the state government would not be completely helpless.

It was finally decided to try out management contract in the central zone and then go in for the JV model for all DISTCOs. It was expected that the management of the contract would bring in private sector skills into the management of distribution business, and generate investor confidence. It was also anticipated that this management contract would be converted into a long-term lease in about three years. For the other three zones, it was agreed that there might be advantage in privatizing them (in the joint sector venture mode) sequentially so that errors would not be repeated (GoI 1998). Accordingly, it was decided to privatize all the zones by the end of year 2000 at the latest as per the following timetable (GRIDCO 1997):

First Zone – Management Contract
Second Zone – Contract to be signed by December 31st 1998
Third zone – Contract to be signed by December 31st 1999
First Zone – December 31st 1999 (long term arrangement)
Fourth Zone – Contract to be signed by December 31st 2000

Preparation of a Reform Bill

'Electricity' is a concurrent subject specified in List III of the Seventh Schedule to the Constitution of India. This means that both the Parliament and the State Legislature have the authority to legislate on the subject but an Act enacted by the Parliament (Central Act) shall prevail over an Act enacted by the Legislature of the State (State Act). Also, the states are bound by the Electricity (Supply) Act 1948, which is a Central Act and lays down the functions and duties to be performed by the Electricity Board. However, Article 254 of the Constitution empowers the legislature of the state to enact laws in relation to electricity even if it is inconsistent with or contrary to the Central Acts. This would, however require the assent of the President of India to remain valid (TERI 1999). Since the existing legislative framework did not provide for implementing the reform components envisaged in Orissa, for example, establishment of an electricity regulatory commission, unbundling and corporatization/privatization of the SEB, etc., a new legislation was necessary. It was also necessary to process it through the GoI and obtain Presidential assent.

5 Unbundling and corporatizing the OSEB

Implementation of the reform blue print started with the enactment of the Reform Bill. It was notified in January 1996 and came into force on April 1996. The OERC became functional in August 1996. The two new corporations, GRIDCO and OHPC, into which the OSEB was initially unbundled had been incorporated in April 1995 under the Companies Act of 1956.

On 1 April 1996 GRIDCO took over the transmission (all lines and substations above 33 kV) and distribution (lines and substations at 33 kV and below) assets of OSEB. All hydro projects of the DoE and OSEB were also transferred to the OHPC. GRIDCO was further unbundled into one transmission and four distribution corporations. The distribution companies were: the Central Electricity Supply Company of Orissa Limited (CESCO), the Western Electricity Supply Company of Orissa Limited (WESCO), the North Eastern Electricity Supply Company of Orissa Limited (NESCO), and the Southern Electricity Supply Company of Orissa Limited (SOUTHCO). All these four companies began their activities as subsidiaries of GRIDCO from November 1998 and the 43 Distribution Divisions of GRIDCO were transferred to these respective subsidiary companies on 26 November 1998, pursuant to the Orissa Electricity Reforms (transfer of assets, liabilities, proceedings, and personnel of GRIDCO to distribution companies) Rules 1998. The balance sheet restructuring and transfer policies adopted in this regard are briefly discussed below:

Balance sheet restructuring

Preparing of a healthy and realistic balance sheet is an essential prerequisite for the corporatization and privatization of any enterprise. Once the exercise is completed, it is expected that it would allow for additional investment to be brought in by achieving appropriate gearing and adequate returns to the investor, and that it would not lead to a tariff shock to the consumers. The liabilities of the company may need to be restructured through writing-off or transfer to ensure that the debt-equity ratio and the debt-service coverage ratio do not exceed what financial institutions in the sector find acceptable. The restructuring of a balance sheet, may or may not be accompanied by revaluation. If revaluation of assets is involved as a part of the restructuring exercise, three options are available:

- Go by the depreciated book value
- Get the asset revalued
- Assess the business value of the proposed transaction.

Each of these options has its merit and demerits from the point of view of the government, the consumer, and the prospective investor. Valuation of assets on the basis of book value less depreciation is likely to produce an unacceptably low value, while revaluation may result in a substantially high value. The government of the day can not be seen to be underselling its assets and would be interested in getting at least as much money as value. From this angle, the route of revaluation of assets appears attractive. However, any substantial upward revision of the value of assets could lead to considerable tariff increases, since the tariff is calculated in accordance with the provisions of the Sixth Schedule to the Electricity (Supply) Act, i.e. it is based on the concepts of capital base. Such tariff shocks may not be desirable, particularly so in the initial stages of the reform process as they would undercut the sustainability of the reform process itself. At the same time, what matters to the successor company is the income it can produce from the assets as a going concern during the life of the license. All these considerations, therefore, define the contours of the context in which a pragmatic judgment has to be skillfully made.

In Orissa, the GoI took over all transmission and distribution assets, and hydro stations of OSEB at a historical depreciated cost of 1036 crore rupees. It then transferred the T&D assets to GRIDCO at depreciated replacement value of 1,958 crore rupees (historical cost Rs. 838 crore). Against the T&D assets, the GoO transferred to GRIDCO 109 crore rupees of loans taken from the PFC, 498 crore rupees from other lenders and also converted 73 crore rupees of its own loans into share capital.

Against the revaluation of fixed assets by 1120 crore rupees, 39.2 crore rupees of electricity charges and 301.2 crore rupees of subsidy payable by the GoO were adjusted. Rs 50.6 crore worth of unserviceable maintenance stocks were also written off, leaving a net increase in assets of 729 crore rupees. The corresponding increase in liabilities involved a conversion of 73.2 crore rupees of GoO loans into equity in addition to issuing a fresh equity to the GoO of 253 crore rupees, and the issue of partly convertible bonds of 400 crore rupees and 150 crore rupees respectively to the GoO and the Employee Trust. The total additional liability thus created was 803 crore rupees. It may be seen that in the process of this restructuring exercise, there was no fresh infusion of cash in the business of the new entity. The restructuring exercise provided that the dividends, if any, payable by the GRIDCO for the first four years would be ploughed back in the shape of fresh loans. It was also provided that the bond to the GoO would not carry any interest for the first five years and further, that part one amounting to 200 crore rupees would be convertible into equity in three equal installments in the 6th, 8th, and 10th years. The remaining part was to carry interest at the rate of 13% per annum until redemption in a period of 15 years, with a moratorium on interest of 5 years. The opening balance sheet (provisional) of the four DISTCOs is in Annexure A.

Table 3 Opening balance sheet for the year 1996/97

Opening balance sheet FY 97	From OSEB To GRIDCO (Rs Lakhs)	
FIXED ASSETS		
Gross Fixed Assets	11032	11032
Revaluation of Assets		11200
Interest and Expenses Capitalized	975	975
Less Accumulated depreciation	3630	3630
Net fixed assets	8378	19578
Cap. Exp. in progress	1340	1340
Total Fixed Assets	9718	20918
CURRENT ASSETS		
Cash and Bank Balances	308	308
Total Stocks	656	150
Receivables for sale of Electricity	5857	1468
Provision for Bad and Doubtful debts	3997	0
Net receivables	1860	1468
RE subsidy receivables	3012	0
Other Receivables	1115	1115
Total current Assets	6951	3041
TOTAL ASSETS	16669	23958
NET WORTH		
Equity	0	3262
Consumer's contribution	1323	1323
Retained earning (losses reserves)	270	270
Restructuring Account	740	0
Grants	478	478
Total net worth	2811	5333
Staff Superannuation Fund (GPF)	898	898
Other Reserve Funds	173	173
LONG TERM DEBTS		
State Government loans	732	0
PFC Loans	1182	1012
Other loans	5530	4977
Partiality convertible bond issued to GOO		4000
Partially convertible bond issued to pension trust		1500
Total Long Term Loans	7444	11489
CURRENT LIABILTIES		
Account payable	4655	4655
Current Maturity Debt	0	723
Deposits from consumers	404	404
Accrued interest on non-govt. loans	284	284
Borrowing for working capital	0	0
Total current liabilities	5344	6067
TOTAL LIABILITES	16669	23958

Transfer policies for employees

In reorganizing any industry, issues relating to transfer of employees are always of great significance. A correct legal and pragmatic approach is needed in dealing with these issues. A special feature in the case of the OSEB was that unlike in other SEBs, the entire cadre of engineers was on deputation from the government. Transfers can be done by agreement or by operation of law (legislation passed in larger public interest). The sanctity of a transfer is significantly greater in the latter case, that of a statutory scheme. Accordingly, a separate section relating to transfer of personnel to GRIDCO and OHPC was included in the Orissa Electricity Reform Act.

The HRD Working Group set up in April 1994 looked into the staffing norms for the OSEB and its successor entities, training needs, funding needs for pension, provident fund and other terminal liabilities and criteria, and the mechanism for a VRS (voluntary retirement scheme). In its report of February 1995, the working group noted interalia, that on the basis of norms in some of the other SEBs and nearby countries there was an overstaffing of 7–15% in hydel generation and 50% in the distribution set up of the OSEB. At the same time it cautioned that this was based on very broad comparisons and should not be taken as the basis for a staff reduction exercise. The report also strongly recommended that there should be no retrenchment in the absence of any social security net to help out those who lose employment. The possibility of a well-structured VRS along with likely costs was also discussed.

Towards the end of 1995 a fresh attempt was made to arrive at the staff requirement on the basis of physical and geographical conditions in Orissa, the work practices and other factors. This involved detailed discussions with the field organizations of GRIDCO and covered both the transmission and distribution functions. With the help of consultants, separate norms were evolved for the four distinct geographical divisions of the state, the coastal plain, northern plateau, western Ghats, (hilly terrain) and the central plateau. Within these broad geographical divisions, separate norms were evolved for urban, semi-urban and rural areas. Simultaneously, the study identified training needs of the organizations including the number of employees to be trained and the areas where they needed training. At the end of this exercise, it was found that after training the surplus staff would be 10% in transmission and 16% in distribution.

On the above basis employees of the erstwhile OSEB were transferred to GRIDCO and OHPC. In the case of GRIDCO, part of the employees were to be further transferred to the DISTCOs. In November 1998 the government notified transfer scheme rules for a transfer of the distribution companies, namely CESCO, WESCO, NESCO, and SOUTHCO. The spirit of this scheme was essentially the same. GRIDCO also put into operation the VRS as a result of which 42 officers and 641 non-executives had left the organization by the time the DISTCOs were privatized.

After creation of GRIDCO and OHPC, the respective management continued to maintain a dialogue with officers and staff. GRIDCO started a bi-monthly newsletter to open a direct and regular channel of communication with its employees. The newsletter featured a message from the Chairman in which he discussed topics of burning interest to the employees and kept them informed of concrete steps taken to safeguard their interests. The employee's questions were answered clearly. GRIDCO also took a number of measures — they checked stagnation of officers, regularized ad hoc engineers and work-charged labourers, negotiated fresh wages, etc. to assure them that the reform programme was employee-friendly.

These measures contributed to the fact that the OSEB (which had 35,000 odd employees belonging to 46 unions, loosely affiliated to 4 federations) did not lose any time on account of employee's protests against the restructuring.

6 Management Contract

As per the distribution privatization strategy, GRIDCO initiated action to award the management contract for the Central zone (comprising the Circles of Bhubaneswar, Cutback, and Dhenkanal) to a private company. It held discussions with a number of private operators and finally awarded the contract to the Bombay Suburban Electricity Supply Limited (BSES). The Distribution Operation Agreement (DOA) was signed on 1October 1996.

Provisions in the DOA

The DOA was a detailed document spelling out, interalia, the duties and responsibilities of BSES and GRIDCO, payment terms, etc. The fees to be paid to BSES had three components,(:) a management fee, basic incentive fee, and a supplementary incentive fee. The management fee was around 4.187 crore rupees in subsequent years. The incentive fees were based on some elaborate formulae taking into account a host of factors such as billing, collection, metering, repair and maintenance expenditure, etc. during the period prior to the award of contract. The validity of the contract was 3 years; but there was also a provision for early termination. This could be by mutual agreement or one of the parties could invoke the termination based on certain stipulated criteria. One such condition, which gave GRIDCO the right to terminate the contract, was if the product of the following formulae (calculated in respect of any incentive fee calculation period) became negative.

$$\left\{R_1 \times \left(\frac{B_2}{B_1}\right)\right\} + R_4 - \left\{R_3 \times \left(\frac{T_2}{T_1}\right) \times \left(\frac{S_2}{S_1}\right)\right\}$$

Where
R_1 and R_2 = Revenue collected from EHT consumers during base and incentive period

R_3 and R_4 = Revenue from LT consumers
B_1 and B_2 = EHT billings
T_1 and T_2 = Average LT Tariff
S_1 and S_2 = Electricity supplied to LT consumer downside of 132/33 kV sub-stations.

The DOA had provided that if GRIDCO served notice on BSES terminating this agreement, BSES would pay to GRIDCO an amount equal to that paid to BSES by GRIDCO multiplied by X/12, where X is equal to 12 minus the number of monthly Management Fee Invoices, which were served on or prior to the date of such notice. In the event of early termination by GRIDCO, no Basic Incentive Fee or Supplementary Incentive Fee would be payable in respect of any unexpired

Incentive Fee Calculation Period. However, if the termination occurred due to a default or breach attributable to BSES, it would be entitled to a proportionate amount of any Basic Incentive Fee or Supplementary Incentive Fee in respect of that part of the Incentive Fee Calculation period, which had expired on the date, it terminates this agreement.

In case of any dispute between GRIDCO and BSES, which could not be resolved by the Management Committee (comprising Chief Executive and Chief Engineer of BSES and Director (Distribution) and Chief Engineer of GRIDCO), it was to be referred to the High Power Steering Committee consisting of the Chairman and Managing Directors of GRIDCO and BSES. The next course for resolution was by arbitration.

Some of the conditions of the DOA were (DOA 1996):

1 BSES shall acquire no proprietary interest in any of the distribution assets,

2 BSES shall have no right or discretion in relation to the fixing of tariffs,

3 BSES shall have the right to discuss a longer term arrangement provided it has complied in all material respects with the terms of the agreement,

4 Key management personnel amongst the GRIDCO staff shall not be reallocated, transferred to other positions or removed or replaced by GRIDCO without the prior written consent of BSES. Before taking any decision with regard to the disciplining of any of the GRIDCO staff who is a member of the Orissa Electrical Engineering Service, the consent of the GoO (as the lending authority) shall be obtained by the GRIDCO (as the borrowing authority).

The contract could not prescribe any specific level of performance for the BSES because reliable data were not available. The finalization of the DOA was, one of the preconditions for World Bank aid and this factor set the pace of the negotiations with BSES. It was noted by GRIDCO that the document was far from perfect, but as it was to be converted into a long-term agreement subsequently, it was decided to go ahead with it.

Contract performance

The performance of the contract did not proceed smoothly. GRIDCO and BSES did not get along well on many issues. According to GRIDCO, BSES had more than once agreed to open counters in important centres to receive consumer's complaints. But BSES wanted additional staff for this which GRIDCO did not agree to. The scheme of opening counters did not therefore take off. BSES had also gone back on its earlier agreement to post assistant managers (Finance) as part of tightening revenue billing and collection activities. GRIDCO had also serious concerns about the attitude of BSES personnel, especially their senior management at Bhubaneshwar. GRIDCO also realized that there were certain inherent shortcomings in the contract such as no penalty clause, management fee unrelated to performance, etc.

BSES felt that non-cooperation by GRIDCO was the major hurdle. Since all the employees belonged to GRIDCO, they were not accountable to BSES. BSES had tried to get officers and staff on deputation before entering into the contract, but the Government of Orissa's Tribunal ruled that they would remain employees of the government alone (Sinha 2002). Also, the BSES was not willing to invest in improving the network's condition, since it only had management control but no ownership rights. In the mean time there was a steep deterioration in the collection during the 6-month period it was under the DOA compared to the previous 6-month period. While collection's in 1997 (April-September) exceeded the collection during the corresponding period in 1996 by 51%, the corresponding increase for the period October-March (DOA period) was only 22%. The product derived from the incentive fee calculations had also become negative.

Termination of the contract

GRIDCO took up a detailed review of the situation and it was noted that if contracts were allowed to drift in this fashion, the investor's confidence would be very seriously eroded. This would be a boon to the private party selected to take over the Central Zone under a long-term privatization agreement as it would be able to grab the zone at a throwaway price but such a development was to be avoided at all costs (GRIDCO 1997). The termination of the DOA nationally and internationally led to, the consensus that the signal that had gone out was positive, namely that GRIDCO had accepted privatization not for its own sake, but because it was expected to be more efficient and responsive than a state-run system. If this aim was not realized, the arrangement with a private party would be terminated. Further, it was decided that a brief factual account of the matter should be published in the press to set at rest the rumours and half truths that were being circulated. The DOA was finally terminated on 30 April 1997 (GRIDCO 1997).BSES held the view that six months was too short a period to judge performance.

Soon after DOA was terminated, BSES issued legal notices to GRIDCO claiming damages of several crores of rupees. GRIDCO countered with even higher claims. The row between them was settled after mutual discussions. BSES withdrew its damage claim and GRIDCO agreed not to debar BSES from taking part in future privatization ventures. BSES also refunded the portion of the management fee relating to the post- termination period of the contract, which was paid in advance by GRIDCO.

7 Process of disinvestment

After the premature termination of the management contract, the GoO decided to go ahead with its plans to privatize the distribution system at one shot by offering 51% equity to private distribution companies in all the four zones. The International Competitive Bidding (ICB) route was taken to select private investors. Several factors contributed to this decision which was different from the earlier one to go in for a sequential privatization. The most important reason was the continued deterioration of the distribution set up. Another reason was that a period of prolonged uncertainty should be avoided since it would lead to demoralization of the staff and fall of productivity [15]. The preparation of the documentation and the process of inviting bids and selecting the successful bidders would be very time consuming and expensive and would be best completed at one stroke. It was also hoped that offering all the four zones for privatization would stimulate investor interest, bring in better bids and wider participation (GRIDCO 2002).

Pre-qualification of bidders

The first step in implementing the privatization strategy was to find out private investors who were interested in and qualified for the job. Accordingly, a Request for Qualification (RFQ) was prepared and widely circulated. It was published in three leading Indian dailies in English, sent out to all the Indian Embassies and High Commissions, the World Bank etc. Publicity was also given through some of leading Merchant Bankers. The document contained background information about prospective business and stipulated that the bidders may either quote for the DISTCOs individually or in a combination of two. The maximum number of bids which any bidder was allowed to make was ten. The main qualification criteria for these consortia or companies were:

- 3 years of operational experience in 33 kV distribution with over 100000 customers
- A turnover of 100 million dollars in the case of foreign companies and 350 million dollars in the case of Indian companies.
- Foreign firms should have at least one Indian partner (minimum 5% stake) in the consortium

The following companies or consortia were not eligible:

- Companies/consortia including companies generating electricity in the state of Orissa and which sell electricity to GRIDCO
- Companies/consortia including companies supplying power to GRIDCO.

In response to the RFQ, GRIDCO received 51 bids for which the following 11 companies or consortia pre-qualified.

1. Reliance Industries Limited and Escom of South Africa
2. Enron Corporation, Portland General Electric (Enron subsidiary company based in Portland, Oregon), and Delhi-based EMCO Transformers Limited
3. BSES Limited
4. National Grid Company, Energy Australia and Modicorp Private Limited
5. Grasim Industries, Singapore Power
6. United Utilities, UK, and AMP Life Limited, Australia and Indure Limited
7. Electricity de France, Infrastrucure Leasing and Financial Services Limited
8. Cal Energy Company Inc, Northern Electric Plc and Dishergarh Power Supply Company Limited
9. Hydro Quebec International, Canada and HEG Limited
10. Tata Electric Company, Northern Ireland Electricity of UK and Viridian Group (the holding company of Northern Ireland Electricity) and
11. AES Corporation, Jyoti Structures Limited.

Preparation of Information Memorandum

Simultaneously GRIDCO preapared an Information Memorandum (IM) for the benefit of all pre-qualified bidders. The IM covered important aspects of the business and features of the zonal businesses to be transferred to each of the DISTCOs. It covered broadly:

- An overview of the activities and organization of the zonal businesses;
- Sales of electricity by the zonal businesses including historic and projected load growth, tariffs, consumer mix, billing experience, and strategy for reduction of non-technical losses;
- A description of the physical system of the zonal businesses and programme of enhancement to improve system performance, increase capacity and reduce technical losses, which are being implemented (including planned improvements to the transmission system);
- The process of tariff -setting and other interactions with the OERC and the relationship of the zonal businesses with the GoO and GoI;
- An analysis of the employment issues relating to the zonal businesses and a description of the extensive training programme which have been implemented since 1996;
- A summary and analysis of the financial data relating to the zonal businesses for FY 1996/97 and FY 1997/98 and GRIDCO management projections for FY 1998/99 to FY 2001/02, and,
- Key provisions of the agreements to which, inter alia, the DISTCOs or purchasers will be a party, etc.

Some of the critical statistics included in the Information Memorandum are at Annexure C. The IM also provided a summary of what GRIDCO believed were the investment opportunities for potential bidders. However, the IM carried the following disclaimer:

"The Information Memorandum includes certain statements, estimates, projections, targets and forecasts with respect to GRIDCO, each of the DISTCOs, the transmission and bulk supply business and the zonal businesses. Such statements, estimates, projections, targets and forecasts reflect various assumptions made by the management, officers and employees of GRIDCO, which assumptions (and the base information on which they are made) may or may not prove to be correct. No representation or warrantee is given as to the reasonableness of, and no reliance should be placed on, any statements, estimates, projections, targets or forecasts or the assumptions on which they may be based and nothing in the Information Memorandum is, or should be relied on as, a promise, representation or warrantee."

It also cautioned prospective bidders conduct their own analysis of the information contained in the IM and advised them to carry out their own investigations into the zonal businesses in Orissa, the legislative and regulatory regime which apply there and, any or all matters pertinent to the proposed privatization and to seek its own professional advice on the legal, financial, regulatory, and taxation consequences of entering into any agreement or arrangement relating to the proposed privatization. The reports prepared by various Working Groups and results of the studies undertaken by consultants were also made available to the bidders.

Due diligence

The bidders were given time for a due diligence programme covering visits to the sites of interest, visits to the data room which contained hundreds of documents covering all aspects of OSEB/GRIDCO's activities and one-on-one discussions. This was to be completed in phases covering the period from 9 September 1998 to 10 December 1998.
Phase 1 covered:

- Access to documents in the data room

The bidders were invited to review the documentation in the data room. Each bidder was given sole access to it for a three-day period when he was at liberty to obtain copies of any document he considered relevant. Details of documents available in the data room were also circulated.

- Site visits to the zones

The bidders were also asked to make site visits to the zones in order to get a feel of the ground situation.

Phase 2 covered:

- Pre-bid conferences with the bidders and question-and-answer sessions

The areas covered during the pre-bid conferences were: the sale process dealing with details of investment structures, technical and financial bids, contractual documentation, financial projections, billing and collection procedure, and tariff policy and mechanics.

- Seeking information through written questions

The bidders were encouraged to seek information through written questions. All questions and answers were circulated to all bidders to make sure that each Bidder had exactly the same information as his competitor (Kanungo Committee Report 2001).(Kanungo Committee 2001)

Phase 3 was earmarked for further visits to the data room and discussions.

Because of local elections, the due diligence exercise took three weeks more than anticipated. None of the bidders sought any extension of the due diligence period. In fact, BSES had first-hand knowledge of CESCO by virtue of being a management contractor for that DISTCO for 6 months.

RFP (request for proposal)

The Request for Proposal (RFP) documents were sent out to all the 11 pre-qualified bidders. The bids were submitted in two parts, technical and financial. The technical bid part of the RFP contained a detailed questionnaire designed to ensure that the bidders had made a study of the distribution business in Orissa. The bids were to be awarded marks based on their responses. In the first category of questions, the bidders were expected to clarify the following matters: the investment structure and preferred route, proposed capital and R&M expenditure, reduction of technical and non-technical losses, improvement in billing and collection, human resources (training, safety and management), consumer services, public relations, and regulatory issues. This carried a total of 500 marks. In another set the bidders were required to develop a preliminary plan of short, medium and long- term options and measures that would be implemented in Orissa. The bidders were specifically required to demonstrate their understanding of the distribution system and business as it currently operated. They were asked to show how they would apply their knowledge and understanding in operating and managing distribution business based on their own experience elsewhere. This carried a total of 250 marks. The minimum qualifying marks were fixed at 450 out of the total 750. It was also stipulated that no bidder would be allowed to buy more than two DISTCOs or to attach any conditions along with their proposals. There was no proposal to rank the technical bids, but it was stipulated that GRIDCO would open the financial bids of only bidders who got the minimum qualifying marks. The successful bidder was to be the one who offered the best price while satisfying the other conditions.

Two committees one technical and the other financial were formed to evaluate the proposals. The committees had nominees from GRIDCO, GoO as well as other experts from outside.

Out of the 11 pre-qualified bidders, the companies at serial numbers 4,6, and 9 dropped out after the due diligence exercise. Of the remaining seven, four did not participate in the bidding process for reasons such as the Asian Economic Crisis, Pokharan-II blast or because they were unviable and small businesses, and regulatory risks [20], etc. Finally only the following three bidders, met the technical requirements.

BSES Limited
Singapore Power and Grasim Industry

TEC-Viridian

A competitive statement of the offers received from the 3 bidders is given below:

DISTCO	51% face value (Rs crore)	Offer (Rs crore)		
		BSES	Grasim	TEC
WESCO	24.81	54.585	36.975	1.64
NESCO	33.614	33.614	No bid	0.71
SOUTHCO	19.20	28.81	No bid	0.569
CESCO	37.08	33.41*	No bid	41.00*

*During re-bid

In addition to the four individual DISTCOs, BSES had also submitted two combination bids, one for WESCO and NESCO, and one for WESCO and SOUTHCO. If GRIDCO chose the latter combination, BSES had offered 30.73 crore rupees for SOUTHCO. There were no bids for CESCO. GRIDCO, therefore, went for a re-bid for this zone and solicited bids from all the seven pre-qualified bidders on the same terms and conditions as provided in the RFP except that bidders were allowed, if they considered it necessary, to stipulate conditions or reservations on a separate sheet attached to the financial bids. In response to this only BSES and TEC-Viridian submitted bids and both these had several conditions attached. TEC offered was for Rs 41.00 crore rupees compared to 33.41 crore rupees of BSES.

The GRIDCO Board deliberated at length on the different bids and decided to accept the offer of BSES for WESCO, NESCO, and SOUTHCO. Looking at the ground realities it also decided to relax the condition that no bidder could be given more than two DISTCOs. Further, it was decided that GRIDCO should not insist on the combination bid of BSES for WESCO and SOUTHCO, although it was slightly more attractive. This was because if GRIDCO did so, BSES might (relying on the RFP condition that it can not be compelled to take more than two companies) refuse to take NESCO under the individual bid. On the other hand, BSES had confirmed that if they had to take three companies, they would be willing to take WESCO and NESCO in combination and SOUTHCO under the individual bid. In case of CESCO, The Board decided to accept the 's offer of 41.0 crore rupees for CESCO subject to clarification from the bidder that the conditions included in their bid would not oblige GRIDCO to give financial support to CESCO to reduce shortfall in revenue. However, this could not be achieved and subsequently the bidder raised several issues in their meetings with GRIDCO making it clear that their offer was not unconditional. Sensing that the consortium was proposing long drawn negotiations (Rao 2001), a letter was issued to them on 12 April 1999 explaining the whole position and requesting them to complete the share acquisition documentation and pay the consideration by 4 p.m. on 13 April 1999; if the consortium failed it would amount to a breach of the bid's terms and conditions. The matter was received at the meeting of the Board of GRIDCO on 13 April 1999 and further discussions were held with the consortium when a package of concessions was offered.

In spite of these efforts, the deal did not materialize and TEC-Viridian finally admitted their inability to complete the transaction. GRIDCO once again approached all the pre-qualified bidders and only the AES consortium expressed interest in CESCO subject to some new terms and conditions, which included GRIDCO opening an escrow account in favour of AES Ib Valley Project (a subsidiary of AES) and GoO accepting an offer from another AES subsidiary for the purchase of 2% more shares in OPGC. After further discussions, CESCO was offered to AES at a consideration of 4200 lakh rupees with effect from 1 September 1999. While taking this decision GRIDCO had noted that CESCO had been incurring losses of about 90 lakh rupees per day totalling of 120 –130 crores rupees from April end to August 1999 [18].

A summary of the prices offered to the successful bidders is in Table 4.

Table 4 Proceeds of disinvestment of 51% of equity shares of the 4 DISTCOs.

Name of Company	Name of the preferred purchaser	Amount offered (Rs in lakhs)	Offered price per share in Rs. (Face value Rs 10/- per share)
WESCO + NESCO	BSES	8819.94	15.10
SOUTHCO	BSES	2880.99	15.00
CESCO	AES-Jyoti	4200.00	11.32
Total		15900.93	13.86

Source: An overview of Gridco, 2002

8 Post-privatization scenario

Financial performance of DISTCOs

Based upon projections made by consultants intimated to prospective bidders through the IM, it was expected that WESCO and NESCO would achieve turn around by 1999 –2000, SOUTHCO by 2000-01, and CESCO by 2001-02. However, none of the DISTCOs could achieve this and suffered losses even at the end of the third year (Table 5).

Table 5 Net profit/(loss) in Rs lakhs

	1999/00		2000/01		2001/02*	
	Projected	Actual	Projected	Actual	Projected	Actual
WESCO	656	(5818)	3893	(11189)	4931	(4081)
NESCO	1686	(5427)	4679	(12280)	7783	(20805)
SOUTHCO	(2585)	(8737)	4350	(8605)	2220	(8372)
CESCO	(12956)	(17773)	(3915)	(17229)	13212	(23968)

Source: Projected figures given in the IM and actual performance figures collected from the OERC. The figures in parenthesis indicate net loss, * Un-audited

Government subsidies

Prior to these reforms the GoO was providing subventions to the OSEB under Section 59 of the Supply Act 1948. This practice was withdrawn immediately in the post-reform period. In the process the GoO saved subsidy payments of about 2770 crores rupees during the period 1995-96 to 2000-01 (GRIDCO 1999). However, this put an added strain on the newly-created entities. The net loss to GRIDCO and DISTCOs during this period was about 2104 crore rupees. The OERC had observed that non-payment of subsidies was in consonance with the spirit of the Reform Act, but the government's financial back-up in the form of a subsidy during the transition period could have substantially eased the situation. In fact, a number of reforming states have made provisions for transitional funding; for example, Andhra Pradesh (1585 crore rupees), Gujarat (1260 crore rupees), Uttar Pradesh (790 crore rupees), Haryana (769.3 crores rupees for one year) Rajasthan (3496.6 crore rupees in four years), and Delhi at the rate (500 crore rupees per annum for five years) (GRIDCO 1999).

Quantum of sales

Figure 4 shows the quantum of sales actually realized by the DISTCOs alongside with those expected in the IM.

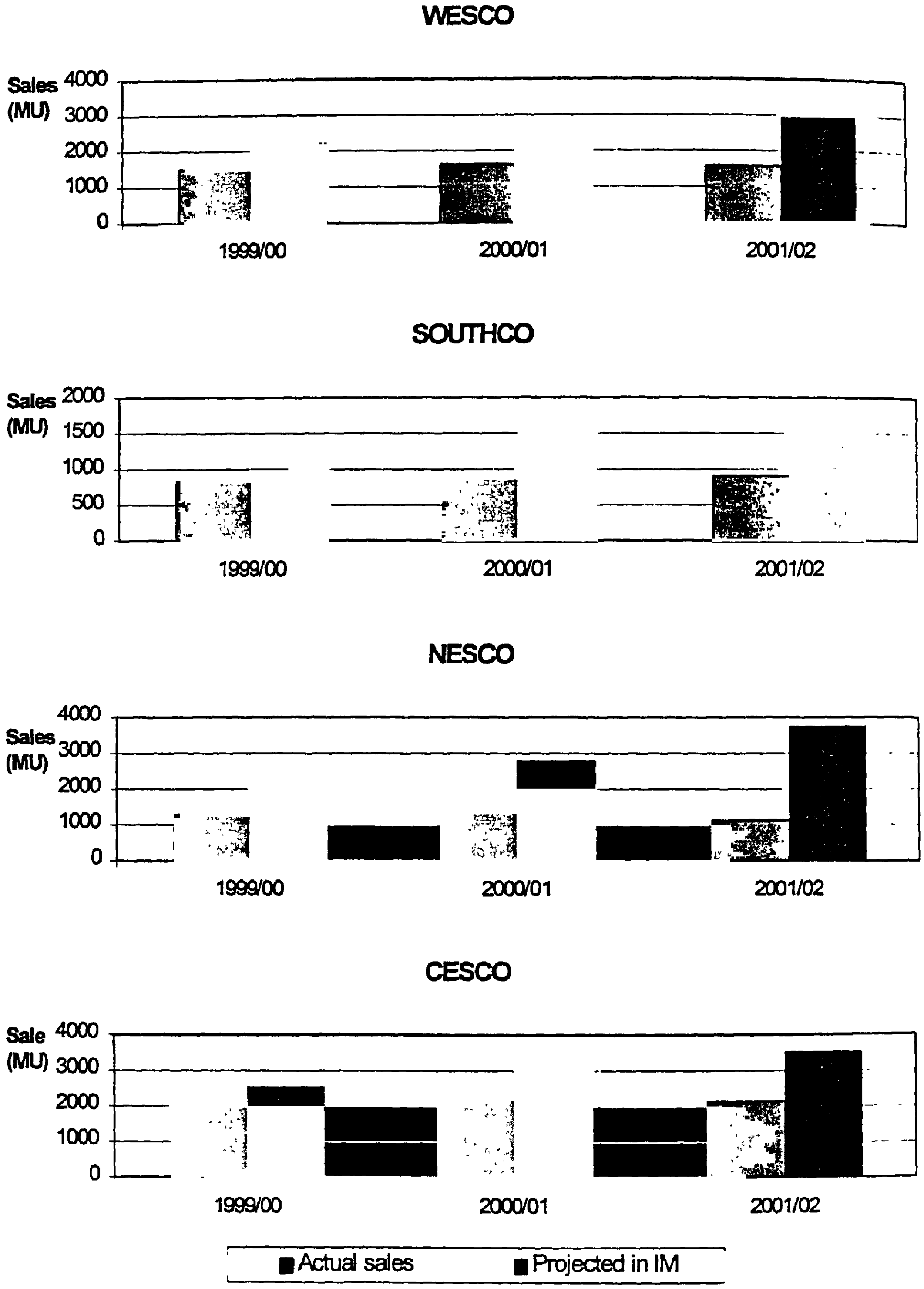


Figure 4: Actual vis-à-vis projected sales

Billing and collection

Figure 5 shows the collection efficiency in the post privatization period compared to what existed in the OSEB and GRIDCO regime. Tables 6 and 7 give the DISTCO wise position.

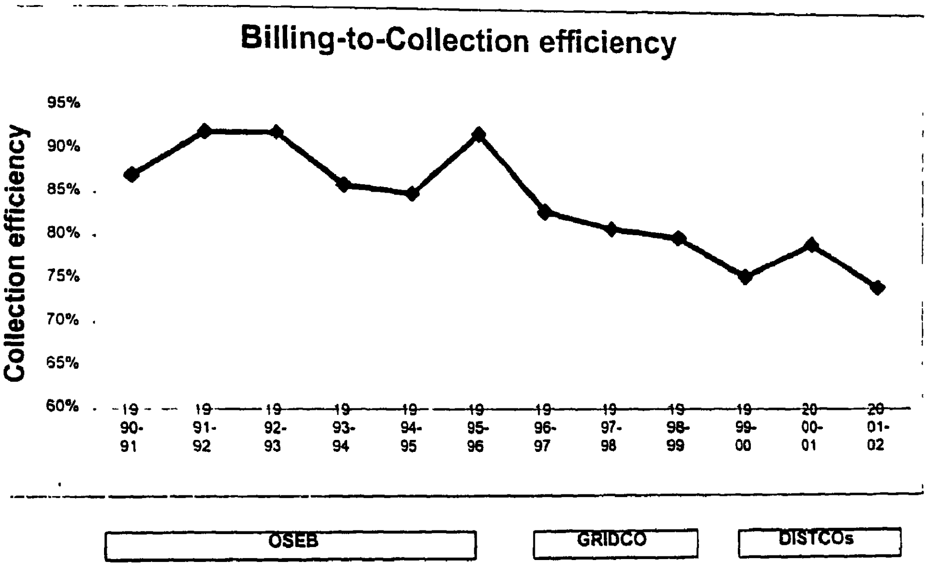


Figure 5 Collection efficiency prior/post reform

Table 6 Collection efficiency DISTCO- wise position

	Billing (Rs crore)	Collection (Rs crore)	Collection-to-billing efficiency
FY 1999/2000[a]			
WESCO	427	350	81.97%
NESCO	327	244	74.62%
SOUTHCO	207	168	81.16%
CESCO	493	336	68.07%
Total	1454	1098	75.49%
FY 2000/01[a]			
WESCO	472	364	77.12%
NESCO	317	276	87.07%
SOUTHCO	225	190	84.44%
CESCO	584	437	74.83%
	1598	1267	79.29%
FY 2001/02[b]			
WESCO	509	400	78.59%
NESCO	338	228	67.46%
SOUTHCO	264	206	78.03%
CESCO	638	454	71.19%
	1733	1287	74.28%

Source: a- An overview of GRIDCO (April 96 to March 02);
b-OERC

Table 7 Consumer category-wise collection efficiency for 2001/02

	Billing (Rs crore)	Collection (Rs crore)	% of Collection- -to-Billing
CESCO			
LT	356.71	211.36	59%
HT	163.65	183.41	112%[1]
EHT	117.85	59.55	51%
Sub-total	638.22	454.33	71%
NESCO			
LT	130.54	69.28	53%
HT	98.94	86.55	87%
EHT	108.78	71.73	66%
Sub-total	338.27	227.57	67%
WESCO			
LT	170.49	73.35	43%
HT	110.67	103.88	94%
EHT	227.37	222.35	98%
Sub-total	508.53	399.59	79%
SOUTHCO			
LT	140.72	90.54	64%
HT	49.87	45.83	92%
EHT	73.35	69.50	95%
Sub-total	263.95	205.87	78%
TOTAL	1748.98	1287.38	74%

Source: An overview of GRIDCO (April 96 to March 02)

---

[1] Percent of collection includes past dues collected during the year

Tariff levels

Table 8 Variations in electricity tariffs since FY 1997

	UNITS/ MONTH	1996/97	1997/98	1998/99	1999/00	2000/01	% increase over 1996/97
Effective from		21-5-96	4-01-97	12-01-98	1-2-2000	1-2-2001	
Category		P/U	P/U	P/U	P/U		
Domestic	100	94	106	130	130	150	59.57%
Domestic	200	122	142	145	155	185	51.64%
Commercial	100	210	235	290	300	340	61.90%
Commercial	200	250	280	320	330	370	48.00%
Irrigation	200	65	80	100	100	120	84.62%
Small Scale Inds.	20% LF	165	205	262.54	306.73	346.73	110.14%
Med. Industries	30% LF	230	265	285.37	295.37	343.00	49.13%
Public Institutions	40% LF	175	200	259.03	289.03	317.12	81.21%
Public Lighting	1000 U/M	155	200	254.13	298.26	325.48	109.99%
Pub. Water Works	50% LF(LT)	210.88	270	285.22	304.35	344.35	63.29%
Pub. Water Works	50% LF(HT)	215.00	290.88	320.88	330.88	360.88	67.85%
General Purpose	40% LF	281.10	306.10	336.10	346.10	376.10	33.80%
Large Industries	70% LF(HT)	248.49	273.49	294.92	293.49	310.63	25.01%
Large Industries	70% LF(EHT)	273.49	293.49	283.49	280.63	297.77	8.88%
Pow. Int. Industries	80% LF(HT)	268.05	288.05	283.05	281.80	293.05	9.33%
Pow. Int. Industries	80% LF(EHT)	268.05	288.05	270.55	268.05	279.30	4.20%
Heavy Industries	70% LF	273.49	293.49	283.49	280.63	297.77	8.88%
Ministeel	40% LF	238.10	276.10	316.10	336.10	366.10	53.76%
Rly. Traction	40% LF	306.10	326.10	326.10	336.10	366.10	19.60%
Overall % Rise		17.00%	10.33%	9.30%	3.92%	10.23%	
				CESCO	**4.00%**	**11.59%**	
				WESCO	**4.00%**	**9.60%**	
				NESCO	**3.00%**	**8.30%**	
				SOUTHCO	**5.00%**	**11.27%**	

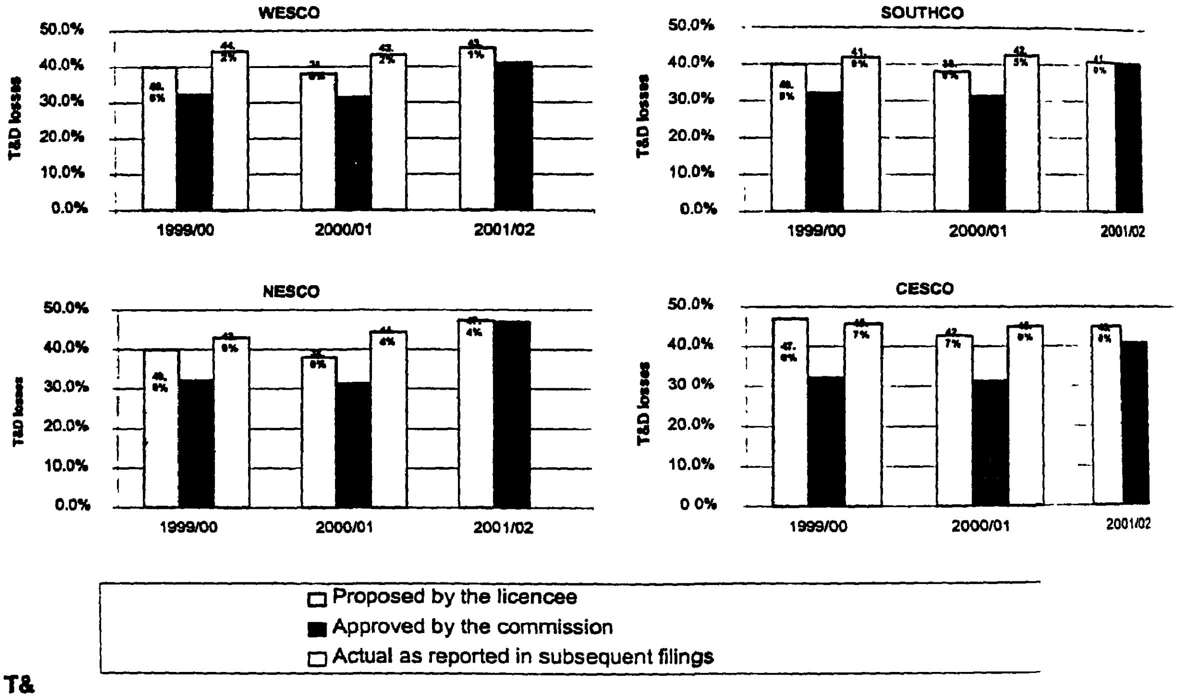
The tariff order of 2000/01 will be effective till July 2002.

Power supply position

The power supply position in the state in terms of peaking power and energy availability has improved compared to FY 1997. Data compiled by CEA shows that peaking shortages have come down from 18% to 11.8% and energy shortage from 3% to 0.1% during the period from 1996/97 to 2001/02. In fact, the state had a marginal energy surplus during 1998/01 and in peaking during 2000/01. The shortages during 2002/03 (April-May 2002) were 10.2% in peaking and 2.2% in energy. There was enforced regulation in power supply in the state during this year due to non-payment of dues to the National Thermal Power Corporation.

T&D losses

The audited statement of accounts of the OSEB had shown T&D losses in the state at 23.81% in 1994/95 and 46.94 in 1995/96. However, these losses had an element of estimate as the number of consumers was not metered (billed on flat- rate basis). Further there were also non-functional/defective meters. The World Bank consultants therefore took up some sample studies at the time of preparation of the Staff Appraisal Report (SAR) in 1996. According to this the losses were to be around 39.5% in 1996/97 and these were be brought down to 21.7% in 2001/02. The IM also mentioned similar losses for 1996/97 and it was indicated that the technical losses at the distribution level were 15.7% (below EHT level) and around 5.8% at the EHT level. The rest, approximately 18%, were commercial losses. Figure 6 shows how the distribution losses varied in the four DISTCOs, corresponding values projected in the IM and those approved by the OERC are also shown alongside.



T&

Figure 6: Proposed/approved and actual T&D losses

Commercial losses, (which arise from the unauthorized use of electricity through hooking, tampering of meters, etc.) constituted the bulk of these losses. The DISTCOs were making special efforts to bring them down. However in doing so they faced obstructions from anti-social elements including attacks on their officers and personnel engaged in enforcement. Support from law and order enforcing agencies of the government assumed importance in this context. Taking note of this and also to address the other concerns of consumers, the GoO constituted district level Advisory-cum-Coordination Committees (May

2001). The composition of these committees and the range of issues they were to address are given in the box below. The committees were to meet every month and promptly submit the proceedings, duly approved by the Collector, to the Energy Department of the government. The Kanungo Committee while reviewing this set up was of the opinion that the district level committees may be substituted by two-tier forums, one at the district level and the other at DISTCO level.

Box 4 Composition of Advisory- cum -Coordination Committee

Collector	Chairman
MPs of the district or their nominees	Member
MLA of the district	Member
Superintendent of police	Member
Executive Engineer, R W SS	Member
Executive Engineer, PHD	Member
Executive officer of NAC/municipal bodies	Member
PODRDA	Member
Representative of Orissa Lift Irrigation Corporation	Member
Representative of Orissa Agro Industries Corporation	Member
M D Nominee of the distribution company Below the rank of superintending engineer	Member

Range of issues:

Rural electrification
Energization of L T points – Private /OLIC
Grant of new connections
Replacement/upgradation of transformers
Removal of low voltage problems
Collection of arrears in Electricity Duty of government
Removal of low voltage problems
Installation of meters
Conducting consumer/load census
Taking action in respect of meter tampering
Taking action in respect of theft of conductors
Regularizing unauthorized connections
Law and order problems faced by the distribution companies
Creating Awareness in the society
Any other socially relevant programme concerning the department of energy

Metering

Tables 9A and B show the status of metering in the four DISTCOs. The base of metering, the procurement mechanism, and the quality of meters were a subject of criticism.

Table 9A Status of metering (FY 2000/01)

	No of consumers	No of working meters	No of defective meters	No of connections without meter
CESCO	656918	261354 (39.78%)	263692 (40.14%)	131872 (20.07%)
NESCO	311804	146839 (47.09%)	99262 (31.83%)	65703 (21.07%)
WESCO	343962	209471 (60.90%)	58881 (17.12%)	75600 (21.98%)
SOUTHCO	381970	260585 (68.22%)	95588 (25.03%)	25797 (6.75%)

Table 9B Status of metering (FY 2001/02)

	No of consumers	No of working meters	No of defective meters	No of connections without meter
CESCO	692380	395694 (57.15%)	196522 (28.38%)	100164 (14.47%)
NESCO	374067	172237 (46.04%)	98940 (26.45%)	102890 (27.51%)
WESCO	379268	263210 (69.4%)	45637 (12.03%)	70421 (18.57%)
SOUTHCO	411596	296814 (72.11%)	86292 (20.97%)	28490 (6.92%)

Source. OERC. The figures in parentheses represent the percentage share with respect to total number of consumers

Quality of service

Annexure D presents some parameters of the quality of service as reported by the licencees to the OERC under affidavit for the year 1999/00 and 2000/01. While these have not been verified by any independent agency, the public have not made any representations against the authenticity of these numbers as published in local newspapers.

Impact of the 1999 cyclones on DISTCOs

Orissa was ravaged by two consecutive cyclones – one on 17.10.99 and the super-cyclone on 29-30.10.99. In the first cyclone the lines and sub-stations of SOUTHCO were severely damaged. The super-cyclone resulted in severe damage to the lines and sub-stations of CESCO and NESCO. The damage covered 12 districts.

The funds required to take up the barest minimum restoration work were estimated at 105.72 crore rupees. It was expected that this sum would be available as a grant from the GoO and/or from GoI, but, no such funds could be made available. A proposal to utilize the funds available from the unutilized portion of the existing World Bank loan amount earmarked for activities such as like Demand Side Management (DSM), and procurement of meters from the existing World Bank Loan could not also be implemented since the on-lending of the loan was not finalized. As a result the three DISTCOs had to incur unexpected expenditures when they had just entered into the business.

The OERC had authorized the DISTCOs to go ahead with the restoration work and divert stores from other schemes to procure 50% of materials as per their overall assessment. It was also monitoring the restoration works; the Commission had appointed an ex-chief electrical inspector to assess the damage. Based on this the allowable expenditure was decided. In the case of CESCO for example, the OERC authorized an expenditure of 52.719 crore rupees as against an initial proposal of 129.57 crores rupees by DISTCO. While adding this amount to the asset base, the Commission also ensured that cost of the old replaced assets was netted out so as to ensure that the consumers were not charged for assets that were not careful. In the case of CESCO the net increase in asset base was 16.61 crore rupees.

Changes in CESCO management

The functioning of CESCO after it was taken over by the AES consortium in September 1999 was beset with problems right from the beginning. These were organizational, financial, and contractual by nature. Finally in August 2001, the OERC revoked the licence and vested the management of the DISTCO in a CEO (chief executive officer) deputed by the government. The status quo continues. The events leading to the exit of the AES consortium are presented in Annexure E.

Rural electrification

Rural electrification is a socio-politically sensitive and relevant issue in the operation of any distribution company. However, these electrification schemes are normally not economically attractive in view of the capital investments, low load density, poor paying capacity of the consumers etc. According to a study by XIM, Bhubanehswar (OERC 2002) typical economics for rural consumers in Orissa are characterized by a billing/input ratio of 35% and a collection/billing ratio of 25%. In other words for every one hundred rupees worth of input the utility was collecting only 8.75 rupees.

In the erstwhile set up these programme were being supported by government subsidies and soft loans. The OSEB had a dedicated wing under one chief engineer to look after rural electrification programme. When the OSEB was restructured and DISTCOs were privatized, the rural electrification wing was disbanded and the focus on rural electrification was lost, though the programme was not given up. The super cyclone and the non-payment of the assured capital subsidy to DISTCOs by the government also contributed to the slackening of interest in taking up new programme. Table 10 presents some statistics on rural electrification during the past few years:

Table 10 Progress in rural electrification

	1997/98	111998/99	1999/2000	000/01
Number of villages electrified	800	817	748	42
umpsets energized	1903	1312	1167	99

The recent tariff filings before the OE*RC show that the DISTCOs have practically no schemes on hand related to rural electrification except those under the PMGY (Prime Minister 's Gramina Yojanna).

The Kanungo Committee (2001) has noted that MPs and MLAs were willing to provide funds under local area development schemes for rural electrification works. However, this had not made headway due to disagreements on departmental charges payable to DISTCO. The Committee suggested that a Rural Electrification Planning Organization (REPO) be set up under the GoO to provide focus and direction to the rural electrification programme, have specific projects prepared of posing to funding agencies and oversee utilization of the funds procured. This organization should have under it four Rural Electrification Planning Units (REPU), one for each DISTCO with which it would work in close coordination. These units should be responsible for drawing up detailed schemes of rural electrification, monitoring the execution of the schemes by the concerned DISTCO and reporting completion of the projects and the expenditure incurred thereon to the Collector of the District and the REPO. On the basis of the Collector's certificate the Government should promptly settle the subsidy payment admissible to a DISTCO. The scheme should be prepared not only to provide domestic lighting but also to meet the requirements of agricultural pumping and agro-processing. They should also be prioritized in consultation with the collector of the concerned district.

In the mean time, alternative forms of intervention had also been tried out to improve power supply to the rural areas. One such initiative was taken by BSES though the formation of the Village Electricity Committees (VEC) or micro privatization. This was conceived by XIM Bhubaneshwar (OERC 2002) and started as a pilot project in August 1999. It now spans over 4900 villages. The role of the VEC includes meter reading, distribution of bills, complaint handling, and collection camp co-ordination, resolving of disputes, agreements on installments, dissemination of information, etc. Eventually it is proposed that independent franchisees be appointed on commercial terms who will handle all interaction with VECs.

Reports till date show that with this set up, billing and collection as well as quality of service has improved in the project areas. For example, records of WESCO as per its tariff filing before the OERC (GRIDCO 1999) show that micro privatization has provided the following benefits.

- Over 1100 long pending consumer's complaints were resolved
- consumers were able to avail connections
- Consumers no longer had to go out of the village for electricity-related problems
- Bill distribution, meter reading and cash collection have become more streamlined/improved
- Large scale metering has brought about reduction in input and an improvement in voltage. Distribution transformers are thereby less loaded and distribution transformer failures are reduced.

9 Views on the outcome of reforms

The outcome of reforms in Orissa's power sector have been commented upon in a number of reports and articles. While some view it as a failure, other do not totally subscribe to this. It is a fact however that the GRIDCO and DISTCOs are continuing to incur losses and the sector has not been able to realize a turn around. Quality of supply and service has also not gone up to the expected levels.

There was a prolonged debate on this topic in the Orissa Legislative Assembly during early 2001, in which a large number of legislators participated. Following this the GoO constituted a six-member committee of independent experts under Sri Sovan Kanungo. This committee in its report submitted to the government in October 2001 has made some wide-ranging comments and recommendations (Kanungo Committee Report 2001). In addition, the Montek Singh Ahluwalia Committee in its report on SEB reforms (MoP 2001) submitted to the GoI in May 2001 had made certain observations on the outcome of reforms. The OERC has commented on the performance of the sector in its tariff order for FY 2001/02. Some of the main issues brought out in these documents are mentioned below.

- Estimation of the initial T&D losses and the targets for reduction in the 1996 SAR of the World Bank were unrealistic. This has been acknowledged in the Bank's Aid Memoir of 31 October 1998, which says "During Project implementation, once much more detailed information became available from RIAP and related work, it turned out that the starting point, the 1996 base figure was much higher, of the order of about 52-53% for OSEB's last year of operation in 1995-96 and about 50% for GRIDCO's first year of operations. The latter figure is confirmed in GRIDCO's audit report. Given that we so severely underestimated GRIDCO's system losses in 1996 and on that basis set unachievable performance targets under Ln. 4014-IN in May 1996, the Regulatory Commission in its March 1997 Tariff Order (which required GRIDCO to achieve 35% system loss level for 1997-98, in line with the original 1996 Bank estimates quoted above), it is not surprising and in fact unavoidable that GRIDCO's financial performance is well below agreed targets"
- The assumption in the SAR on the growth in demand for power in the state was highly ambitious, not only in terms of totals but also in the composition. The demand for industrial power (EHT) which, subsidizes domestic demand (LT supply), was grossly under realized while domestic and commercial demand with high losses grew fast. The preference for captive generation on part of EHT consumers with rising tariffs was not anticipated.
- On the collection front, the assumption in the SAR was that 100% of the billings would be collected from the year 1997/98 onwards but this was hard to achieve.

- Services of local consultants as well as highly rated consulting firms of international repute were used extensively at a high cost (cover 300 crore rupees) to prepare the blueprint of reform. High cost consulting services were also retained to assist the utilities in developing internal systems of operation management, financial control, technical services, contract management, project implementation, etc. However, judging by the fate of the reform and the present state of the utilities, this has belied the expectations.

- The private promoters of the DISTCOs neither brought superior management skills nor did they arrange financial support even by way of working capital for the companies, which were in dire need of capital, working capital in particular.

- There is no evidence of introduction of any innovative practices in the management of the DISTCOs except for the experiment of involving village communities in streamlining the power supply in rural areas.

- The power purchase model of SBM had inherent limitations in promoting competition.

- The process of tariff fixation on a year-to-year basis using a cost plus approach has excessive regulatory uncertainty. A multi-year framework is necessary.

- Many non-paying customers enjoy political patronage. Government agencies such as police stations, schools, public hospitals, etc. do not routinely pay their bills due to their own financial difficulties.

- Rural electrification has suffered as a result of reforms.

- The cyclones of 1999 were a set back to the efforts of the privatized DISTCOs in achieving turnaround.

- The assets were over-valued. This should have been kept in abeyance till the systems were brought to balance.

- GoO should allow a moratorium on debt servicing to the state except for the amounts in respect of loans from the World Bank.

A judgemental analysis of the above is left to the reader.

The distribution-privatization debate is still on as other states are reforming their power sector with a focus on improving the performance of distribution. The just concluded privatization of DVB differed in many respects (asset valuation, reckoning of losses, criteria for selection of bidders, government funds for the transition period to subsidise power purchase etc.). The following issues are of topical interest:

- Alternatives to privatization
- Efforts needed to make a utility privatizable
- Big bang approach vs sequential approach to privatization
- Alternative models for privatization of distribution
- Role of cooperatives and panchayats in rural electrification

- Enactment of anti-theft law
- Regulator's role in privatization
- Promotion of competition.

Annexure A

Provisional opening balance sheet of DISTCOs as on 31 March 1999 (figures in lakh rupees)

	CESCO	NESCO	WESCO	SOUTHCO
Sources of Fund				
Share capital authorized	72,72 (7,27,20,000 equity shares of Rs 10 each)	65,91 (6,59,10000 equity shares of Rs. 10 each issued, subscribed and paid up)	48,65 (4,86,50,000 equity shares of Rs 10 each)	3766 (3,76,600 equity shares of Rs 10 each issued, subscribed and paid up)
Issued, subscribed and paid up	72,72 (7,27,20,000 equity shares of Rs10 each)	65,91 (6,59,10,100 equity shares of Rs 10 each)	48,65 (4,86,50,000 equity shares of Rs 10 each)	3766 (3,76,60,000 equity shares of Rs 10 each)
Retained earnings	0	0	0	0
Staff Welfare Board	2	1	1	1
Contingencies reserve	119	90	93	83
Total – shareholders fund	73,93	6682	4959	3850
Consumer's contribution	65,24	4904	4978	4514
Unsecured loan				
Project related liabilities				
World Bank Loan	55,31	32,41	2870	2453
Other long term debt	16,126	1,0484	11696	10566
Total unsecured loan	21657	1,37,25	14566	13019
Current liabilities				
Accounts payable	9032	53,70	7038	2913
Other current liabilities	12418	41,32	2663	4326
Consumer security deposit	1777	27,70	4650	1880
Total current liabilities	23227	1,22,72	14351	9119
TOTAL SOURCES	58801	3,75,83	38854	30502
Application of fund				
FIXED ASSETS				
Gross block	3,60,43	2,63,39	26716	23382
Less: accumulated depreciation	67,66	53,32	5534	4920
Net block	2,92,77	2,10,07	21182	18462
Capital works in progress	61,79	42,14	3229	2838
Total fixed assets	3,54,56	2,52,21	24411	21300
Investments	118	90	92	83
CURRENT ASSETS				
Gross receivables for sale of power	3,54,27	1,28,68	21496	15276
Less provision for bad and doubtful debts	1,82,46	71,99	10428	9007
Net receivables for sale of power	1,71,81	56,69	11068	6269
Gross store and spares	32,89	24,09	2028	1544
Less provision for obsolete spares	7,03	1,67	790	682
Net stores and spares	25,86	22,42	1238	862
Cash and bank balances	14,37	10,00	1000	1000
Other receivables	20,23	33,61	1044	988
Total current assets	2,32,27	1,22,72	14351	9119
TOTAL APPLICATIONS	5,88,01	3,75,83	38854	30502

Source : Department of Energy, Government of Orissa Notification dated 25th November 1998

Annexure B

Balance sheet of DISTCOs (based on management accounts)

CESCO

	As ont 31.03.2002
SOURCE OF FUNDS	7272
Shareholder's fund	7272
Share capital	
Reserves and surplus	49446.71
Loan funds	49446.71
Secured loans	
Unsecured loans	
Other funds	
Consumer's security deposits	3440.28
Capital contributions from consumers	8113.09
Capital reserves	251.00
Total	68523.08
APPLICATION OF FUNDS	
Fixed assets	47022.09
Gross block	48660.30
Less: Accumulated depreciation	15241.85
Net block	33418.45
Capital work in progress	13485.64
Investments	118.00
Current assets, loans and advances	
Sundry debtors (net) against sale of power	60715.35
Other receivable (net)	1675.00
Inventories or stocks (net)	2341.51
Cash and bank balances	3938.64
Loans and advances	
Less: Current liabilities and provisions	106139.33
Current liabilities (accounts payable)	106139.33
Provisions	-
Profit and loss account debit balance	58969.81
Net current assets	21500.98
Total application of funds	68523.07
Miscellaneous expenditure to the extent not written off or adjusted	

NESCO

	As on 31.03.2002
SOURCE OF FUNDS	
Shareholder's fund	
Share capital	6591.00
Reserves and surplus	304.87
Loan funds	
Secured loans	
Unsecured loans	38152.10
Other funds	
Consumer's security deposits	4060.96
Capital contributions from consumers	5182.24
Total	54291.16
APPLICATION OF FUNDS	
Fixed assets	
Gross block	36379.89
Less: accumulated depreciation	11674.61
Net block	24705.28
Capital work in progress	2390.94
Total CWIP	2390.94
Investments	
Current assets, loans and advances	
Sundry debtors	19656.29
Inventory	1488.46
Cash and bank balances	953.80
Loans and advances	241.48
Less: Current Liabilities and provisions	
Accounts payable	24527.99
Current liabilities	9388.60
Other current liabilities	-18518.69
Provisions	16458.41
Net current assets	-9516.28
Miscellaneous expenditure to the extent not written off or adjusted	
Profit and loss account debit balance	36711.23
Total application	54291.16

WESCO

	As on 31.03.2002
SOURCE OF FUNDS	
Shareholder's fund	
Share capital	4865.00
Reserves and surplus	341.23
Loan funds	
Secured loans	
Unsecured loans	33618.18
Other funds	
Consumer's security deposits	6673.38
Capital contributions from consumers	5300.59
Total	50798.38
APPLICATION OF FUNDS	

Fixed assets	
Gross block	38317.35
Less: Accumulated depreciation	12632.82
Net block	25684.53
Capital work in progress	
Capital stock	
Total CWIP	4784.68
Investments	0.00
Current assets, loans and advances	
Sundry debtors	29991.59
Inventory	1825.00
Cash and bank balances	767.02
Loans and advances	614.97
Less: Current liabilities and provisions	
Accounts payable	30701.72
Current liabilities	8502.81
Net current assets	6005.95
Miscellaneous expenditure to the extent not written off or adjusted	
Profit and loss account debit balance	26335.13
Total application	50798.39

SOUTHCO

	As on 31.03.2001
SOURCE OF FUNDS	
Shareholder's fund	
Share capital	3766.00
Reserves and surplus	168.76
Loan funds	
Secured loans	
Unsecured loans	17047.66
12.5% power bond to GRIDCO	13812.50
Consumer's security deposits	2795.35
Capital contribution from consumers	4721.09
Total	42311.36
APPLICATION OF FUNDS	
Fixed assets	
Gross block	29529.92
Less: Accumulated depreciation	8465.51
Net block	21064.42
Capital work in progress	1600.74
Capital stock	
Total CWIP	1600.74
Investments	0.00
Current assets, loans and advances	
Sundry debtors	14818.45
Inventory	
I) Capital	1476.29
ii) O&M	770.25
Cash and bank balances	697.50
Loans and advances	17317.78

Less: Current liabilities and provisions	
Accounts payable	7134.13
Current liabilities	8055.83
Provision for pension, gratuity and leave encashment	17525.11
Long/short term working capital loan	0.00
Net current assets	2365.21
Miscellaneous expenditure to the extent not written off or adjusted	
Profit and loss Account debit balance	17280.99
Total application	42311.36

Annexure C

Zone wise statistics as given in the Information Memorandum

Western Zone

	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	2471	2582	2843	3191	3429	3604
Distribution technical loss (MU)	364	441	492	535	535	524
Energy consumed (MU)	2106	2140	2351	2656	2893	3080
Distribution non-technical loss (MU)	623	583	537	455	293	152
Energy billed (MU)	1483	1557	1814	2201	2601	2928
Distribution technical Loss (%)	14.8%	17.1%	17.3%	16.8%	15.6%	14.5%
Distribution non-technical loss (%)	25.2%	22.6%	18.9%	14.2%	8.5%	4.2%
Total loss (%)	40.0%	39.7%	36.2%	31.0%	24.1%	18.8%

Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	323	303	533	543	554	570
Commercial	84	81	96	108	133	153
Industrial LT	65	74	71	98	120	139
Industrial HT	801	878	879	1162	1434	1651
Public ighting	8	9	9	12	15	17
Public water works	16	21	16	28	34	40
Railway traction	98	92	96	122	151	174
Irrigation	41	45	51	59	73	84
Non- industrial	47	53	65	70	87	100
Total	1483	1557	1814	2201	2601	2928

Southern Zone

	Actual/Forecast			Projections		
	1996/97	19997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	1470	1457	1580	1737	2130	2274
Distribution technical Loss (MU)	228	281	275	293	335	333
Energy consumed (MU)	1242	1176	1305	1444	1795	1941
Distribution non-technical loss (MU)	384	294	202	142	90	96
Energy billed (MU)	857	881	1103	1303	1705	1845
Distribution technical loss (%)	15.5%	19.3%	17.4%	16.9%	15.7%	14.6%
Distribution non-technical loss (%)	26.1%	20.2%	12.8%	8.1%	4.2%	4.2%
Total loss (%)	41.7%	39.5%	30.2%	25.0%	19.9%	18.9%

Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	261	321	417	453	514	569
Commercial	57	76	65	107	121	134
Industrial LT	47	48	50	68	77	86
Industrial HT	280	229	270	322	611	650
Public lighting	6	6	6	9	10	11
Public water works	19	19	20	27	31	34
Railway traction	75	72	73	102	116	128
Irrigation	37	39	47	55	62	69
Non- industrial	76	71	157	159	162	165
Total	857	882	1103	1303	1705	1845

North Eastern Zone

	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	1770	2008	2170	3551	3697	4684
Distribution technical loss (MU)	329	394	408	649	633	751
Energy consumed (MU)	1441	1615	1762	2902	3065	3933
Distribution non-technical loss (MU)	527	466	391	474	282	198
Energy billed (MU)	915	1149	1371	2428	2782	3735
Distribution technical loss (%)	18.6%	19.6%	18.8%	18.3%	17.1%	16.0%
Distribution non-technical loss (%)	29.8%	23.2%	18.0%	13.3%	7.6%	4.2%
Total loss (%)	48.3%	42.8%	36.8%	31.6%	24.7%	20.3%

Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	19997/98	1998/99	1999/00	2000/01	2001/02
Domestic	202	231	313	315	317	393
Commercial	42	47	48	49	59	79
Industrial LT	49	50	54	55	64	85
Industrial HT	539	544	683	1733	2036	2828
Public lighting	4	5	5	5	7	9
Public water works	6	7	6	6	9	12
Railway traction	12	12	11	11	15	20
Irrigation	42	57	53	54	73	98
Non- industrial	18	21	24	24	27	37
EOU sales to NTPC power at cost	-	174	174	174	174	174
Total	915	1149	1371	2428	2782	3735

Central Zone

	Actual/Forecast			Projections		
	1996/97	19997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	3354	3597	3649	4036	4287	4494
Distribution technical loss (MU)	673	608	628	673	665	649
Energy consumed (MU)	2680	2989	3022	3363	3622	3845
Distribution non-technical loss (MU)	1059	1137	931	841	649	325
Energy billed (MU)	1622	1852	2091	2522	2973	3521
Distribution technical loss (%)	20.1%	16.9%	17.2%	16.7%	15.5%	14.4%
Distribution non-technical loss (%)	31.6%	31.6%	25.5%	20.8%	15.1%	7.2%
Total loss (%)	51.6%	48.5%	42.7%	37.5%	30.6%	21.7%

Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	606	702	912	930	1057	1267
Commercial	127	134	145	170	201	241
Industrial LT	96	92	105	117	139	166
Industrial HT	607	674	680	855	1072	1274
Public lighting	10	13	11	16	19	23
Public water works	61	46	60	59	70	84
Railway traction	-	-	-	-	-	-
Irrigation	39	50	49	63	75	90
Non- industrial	76	116	105	147	175	210
EOU sales to NTPC power at cost	-	25	25	165	765	165
Total	1622	1851	2091	2522	2973	3521

Annexure D

Quality of service in the DISTCOs

Sl No	Item of OERC overall performance	Minimum standard	Achievement * (1999/2000; 2000/01)			
			CESCO	NESCO	SOUTHCO	WESCO
1	Process and provide new connections to domestic consumer within 40 working days of date of application	85% of feasible cases	98%; 97%	99% ; 99.64%	100%, 100%	98% , 99%
2	Process and provide new connections to commercial consumer within 40 working days of date of application	85% of the feasible cases	97.40%; 98%	99% ; 99.64%	100% , 100%	98% , 99%
3	Process and provide new connections to commercial agricultural pumps within 60 working days of date of application	85% of the feasible cases	88.9% ; 94%	68.8% ; 26.3%	83.5% ; 85%	100% , 88%
4	Process and provide new connections to industrial consumers with demand upto 22 KVA within 90 working days	85% of the feasible cases	85.80%; 95%	NA	100%	100%
5	Reconnect supply of domestic/commercial consumers if disconnected for non-payment of electricity charges as billed within 24 hours of production of proof of payment	80% of the feasible cases	49.20%; 71%	83% ; 84.8%	73% ; 80%	100% ; 100%
6	Reconnect supply, of agricultural pumps if disconnected for non-payment of electricity charges as billed, within 48 hours of production of proof of payment.	80% of the cases	50% ; 70%	83% ; 84.8%	73% ; 100%	100% , 100%
7	Reconnect supply of industrial consumers supplied at 230/400 V, if disconnected for non-payment of electricity charges as billed, within 24 hours of production of proof of payment.	80% of the cases	81.40%; 86%	83% ; 84.8%	73% ; 100%	100% ; 100%
8	Installation of correct meter within a year	40% of cases of unmetered connection	13.67%; 22%	56% ; 25.1%	91% ; 39%	19% , 4%
9	Replacement of faulty meters where meters are installed	40%	29%; 12%	12% ; 25.1%	11% ; 20%	30% , 39%
10	Arrange to test the meter belonging to the consumer within 15 working days of receipt of necessary testing fees from the consumers	60% of the cases	97 60% ; 80%	97.50% ; 98 8%	100% ; 100%	100% ; 100%

Note: * Quality of Service in DISTCOs in 2000-01

Annexure E

Exit of AES consortium from CESCO management

Soon after privatization, the CESCO management created a separate management cadre with conditions of services very much different from those in the CESCO Officers Service Regulation. These officers were given substantially higher salaries and perks and also the discretion to give large bonuses, reduce emoluments, and terminate services. Most of those recruited to this cadre (55 out of 72) were outsiders and some of them were just in their early thirties with very little distribution experience. Existing CESCO officers (transferred from GRIDCO) with long years of experience were to work under them. The morale and discipline of the employees suffered in the process.

CESCO also defaulted in meeting some contractual obligations. For example, in August 2000, they exhausted the cash accommodation of 174 crore rupees provided by GRIDCO; but failed to bring additional funds on their own to meet further shortfalls.

GRIDCO and CESCO had signed an escrow agreement on 11.07.2000 whereby any cash received towards payment of any receivables of CESCO were to deposited by CESCO in the CESCO escrow account to be maintained by the escrow agent at the Bhubaneswar branch within 48 hours and were not be used for any other purpose. Operationalisation of this escrow mechanism as per this agreement was also not achieved and CESCO started defaulting payments to GRIDCO for power purchase. As a result GRIDCO started defaulting in its escrow obligation to OPGC. This in turn led to OPGC reducing power supply to GRIDCO. The government tried to sort out the matter through discussions but did not succeed. GRIDCO then obtained an interim order from the High Court restraining OPGC from imposing power cuts. GRIDCO also moved the OERC in the matter and the latter directed CESCO in April 2001 (Case No.31/2001), to abide by their contractual commitments. Seeing little progress GRIDCO again approached the OERC in July 2001. When this case was being heard, GRIDCO got information that CESCO had bypassed the escrow mechanism by diverting 18.59 crore rupees. The OERC was then moved requesting criminal action against CESCO. At that stage, the government intervened and held discussions with GRIDCO and CESCO. Thereafter GRIDCO decided not to pursue the case further and petitioned OERC accordingly. OERC took a lenient view and closed the case in July 2001. The Commission only warned that if any breach of the contract entered into between GRIDCO and CESCO was brought to the Commission's notice in future, then it would be compelled to take penal action against CESCO.

Around this time AES was also having some problems with the OPGC where they had a 49% share-holding. The employee unrest there had led the GoO to invoke provisions of the Orissa Essential Services (Maintenance) Act, 1998 prohibiting strikes in all establishments in the state dealing with generation, transmission, and distribution of electricity. AES also could not increase its share holding in OPGC by another 2% as was proposed while taking over CESCO.

All these events led to the consortium losing interest in CESCO and in July 2001 the AES sought GRIDCO's permission to sell its shares either to a third partner or at a negotiated price to GRIDCO. This was against the Shareholders Agreement (which required a minimum lock–in period of 5 years before disposing shares) and hence was not agreed to. The chairman of AES nevertheless made it clear to the government that they were not interested in continuing with the management of CESCO. This was followed by the resignation of the managing director and other functional directors of CESCO in July 2001. They were replaced by a technical director and four other non-executive directors; but this team had no instructions to operate bank accounts. In-house billing and collection were also affected since the corporate offices were locked up. The new MD was also replaced in September 2001.

In the mean time the employees of CESCO started getting restive since the CESCO board refused to make any provision for paying salaries. The system restoration work that was in progress following heavy rains and floods in July 2001 also suffered. The GRIDCO Board feared that if this situation were allowed to continue it would result in disruption of power supplies to the CESCO area, and approached OERC. In August 2001,CESCO was also alleged to have contravened certain conditions and requirements of the Orissa Distribution and Retail Supply Licence, 1999. These included a reluctance by CESCO to take steps for the procurement of adequate power, failing to take prompt and effective steps in the matter of billing and collection of revenue, defaulting in disbursement of the pay and allowances of its employees, and failing to repair and restore distribution system and other assets damaged by the super cyclone and floods within its licenced area.

OERC in its order of 24 August 2001 gave directions for vesting the management of CESCO in a CEO (Chief Executive Officer), and requested the GoO to forward a list of suitable names from which one would be selected by the Commission to take over the management and control of CESCO. Accordingly, GoO nominated Sri Suresh Chandra Mohapatra, IAS and Sri Pradeep Jena, IAS. The Commission selected Mohapatra and directed that with immediate effect the management and control of the undertaking of CESCO with all its assets, interests and rights would vest with Shri Suresh Chandra Mohapatra who would function under the supervision of the OERC and would send periodical reports to the Commission as it directs.

Annexure F

International experience in distribution privatization

Electric utilities in most developed and developing countries are traditionally government owned. In USA utilities were largely private investor-owned. The electricity supply business was considered a natural monopoly and therefore kept primarily in the public sector. The institution of independent regulatory commissions was evolved in the early part of the twentieth century in USA to regulate private investor-owned utilities. The restructuring of utilities followed by privatization and/or introduction of gradual or phased open access in distribution is a relatively recent phenomenon, that began in the late 1980s.

Several countries have undertaken reforms and privatization. The underlying reasons for change have been different in different countries while some trends have been common. The major drivers for change in developed countries, such as the UK and USA, have generally been changed political and economic thinking. It was felt that objectives of efficiency, lower price levels and better service to the consumer could be achieved by treating generation as an activity that could be undertaken competitively and therefore left to market forces. The wires business of transmission and distribution only need to be seen as naturally monopolistic.

Accordingly, the consumers would benefit through efficiency gains from deregulation and competition in generation and supply and the network for transmission and distribution should provide non-discriminatory open access with the transmission and distribution tariffs regulated.

UK was a pioneer in unbundling its government-owned vertically integrated utility and privatizing it and introducing generation to continuous competition through a spot market and a power pool. In USA, which is a very large federal country, the situation varies across states. California attempted to replicate the UK approach. In developing countries such as Latin America and South East Asia poor performance and public sector financial constraints have been the drivers for change. While in developed countries, the availability and quality of supply was not an issue, developing countries were facing increasing demand supply gaps. Private sector investment was found necessary for upgrading existing system and for financing additional capacities. While the conditions prevailing in the power sector in Europe and USA were different from those in India, the Indian situation may be found to be closer to some of the Latin American and South East Asian countries.

There have been more than 70 electricity distribution privatizations over 1992/1999 of which about half have been in Latin America. An in-house survey from the IFC/WB estimated that during 1992/1999, 12 developing countries privatized their distribution in different forms through 74 transactions valued at 38 billion dollars.

PRIVATIZATION OF DISTRIBUTION NETWORKS 1992/99

Country	Number of sales	Dates	Total customers	Sale amount (× 10^6 dollars)	Sale amount present value (× 10^6 dollars)	Proceeds (PV) ($mil)	Adjusted proceeds (PV) (× 10^6 dollars)	Adjusted enterprise value (PV)
Argentina	18	Sep 92- Jun 98	6,416.00	2816.00	3134.00	3412.00	3097.00	4894.00
Brazil	17	Jul 95- Sept 98	26871.00	18141.00	19041.00	20784.00	20205.00	36780.00
Peru	9	Jul 94 – Nov 98	2066.00	604.00	665.00	665.00	665.00	1315.00
Hungary	6		4965.00	1100.00	1230.00	1230.00	1230.00	2618.00
Australia	5		1990.00	6257.00	6888.00	6888.00	6888.00	8224.00
India	4	Apr 99 –Sep 99	1320.00	37.00	38.00	1113.00	113.00	222.00
El Salvador	3	Jan 98	883.00	586.00	611.00	611.00	611.00	769.00
Colombia	3	May 97 – Aug 98	2890.00	1953.00	2041.00	2672.00	2672.00	4857.00
Bolivia	2	Aug 95 – Dec 95	397.00	116.00	128.00	142.00	142.00	144.00
Dominican Rep	2	Apr 99- Sep 99	812.000	321.000	325.00	349.00	349.00	698.00
Guatemala	2	Jul 98 –Jan 99	1114.00	621.00	638.00	689.00	689.00	861.00
Panama	2	Sep 98	454.00	302.00	309.00	309.00	309.00	606.00
Georgia	1	Nov 98	370.00	26.00	26.00	84.00	84.00	113.00
Totals	74	Sep 92- Sep 99	50549.00	35050.00	37950.00	37055.00	37055.00	62102.00

Further, another IFC/ World Bank (WB) study reports that energy losses in distribution significantly declined within 2–6 years following privatization in Argentina, Chile, and Peru. Accordingly, an increasing number of governments from the developing/developed countries are actively encouraging and seeking private sector participation in their power distribution operations.

As an example, we can look at the Argentinian experience, which has been accepted as being successful. By the late 1980s, the electricity sector in Argentina was confronted with severe supply and financial problems arising from an inadequate and confusing legal/institutional framework, poor tariff policies, heavy debt burdens, reliance on contribution of the federal (central) government, physical deterioration of facilities due to inadequate maintenance and upgradation, and lack of consistent planning.

The GoA (Government of Argentina) launched a substantial restructuring and privatization programme in 1991. Essential elements of the power sector reform included implementing tariffs necessary to recover costs, providing a new regulatory framework under which generation, transmission and distribution functions were separated and initiating privatization of state-owned agencies. The restructuring process in the country also saw the establishment of an independent regulatory body and finally the creation of a wholesale electricity market. Privatization commenced in 1992 with the sale of state-owned assets in generation and distribution. Most of the initial privatizations resulted in the private sector owning at least 51% of the assets, the GoA holding was reduced to less than 10% through further sale to international private players. Further, the bidding was done on the basis of multi-year T&D loss reduction.

A good example of a distribution company success story is Edenor, one of the three distribution companies initially privatized in the Buenos Aires area. Edenor has a service area of 4,400 km with a serviceable population of about 7 million people. The situation of the company at the time of takeover by private sector was dismal. Total energy losses were about 30% with frequent power interruptions, a de-motivated workforce, an oversized payroll, widespread internal corruption, social and political problems with users in poor neighbourhoods (50, 000 families), and low customer satisfaction.

The private company initiated a change in the corporate culture of the organization by partial employee reduction after negotiations with the unions, inducting performance evaluations, implementing new systems (for administrations, billing, collection, customer management etc.) and tackling internal corruption strictly. A big challenge for the company was dealing with non-paying customers and illegal users in poor neighbourhoods. It successfully managed to change 'illegal users' 'to consumers'. This, coupled with an effective regulatory framework, ensured that the company could turn around its operations successfully.

Edenor managed to reduce energy losses from about 30% in 1992 to 11% in 1998. The total workforce was reduced from over 6,300 employees in 1992 to less than 3,000 in 1998. Operating costs were brought down by 50% in the same period. The frequency of interruptions decreased by more than 65% over five years.

It should be noted that although the market structure and regulatory framework in Argentina were well conceived and implemented, they were viewed with suspicion by the public in the initial years of the privatization programme in 1992/93. However, after the transition period had passed and positive results started showing, the mood turned positive. Also, selling off state assets in Argentina was not totally cost-free for the government. In order to enhance the success of the restructuring and privatization programme, the GoA agreed to retain some of the debt from the state assets. This debt associated with privatization was offset partially by the subsequent influx of foreign investment. Further, it should be assumed that the overall debt of the government would have been much higher without the privatization process, which reduced losses and brought about efficiency in the system.

Observations from international experience

The unbundling of generation, transmission, and distribution into separate entities is a general trend in most countries including several developing ones. Unbundling has helped introduce competition in various segments of the power industry and has facilitated the privatization process. Following privatization, in Argentina wholesale electricity prices fell about 60% from the pre-privatization level of 50 dollars per mega watt-hour in August 1992.

Considerable preparatory work needs to be carried out prior to reforms. Argentina had to attract foreign players since the poorly developed capital market did not present alternatives, given the size of the investments to be made by the private sector. Also, there was a shortage of domestic operators with enough experience and financial strength. Preparation was done in two areas viz. conceptualizing a dynamic approach for private sector participation and result-oriented marketing to potential entities. Business houses that could form viable individual commercial entities were identified. Detailed information on technical, commercial administrative, economic, and accounting aspects was prepared and incorporated in the tender documents. The whole process was guided by a philosophy of transparency, in order to satisfy the needs of public opinion, legislative requirements, and expectations of potential investors. Investor uncertainty manifests itself as reduced asset valuations and bids. These countries have used the most effective way of reducing uncertainty, which is through information-sharing.

The degree of private sector participation varies across countries. Typically, the ownership in generation and distribution was transferred to private players in a phased manner through a reduction in government stake. Transmission had remained a monopoly in most countries, mainly in the public sector. A significant point to note is that South East Asian countries have not experienced the fundamental restructuring seen in Latin American and European countries. Generally, the pressure to expand generation capacity in order to improve availability of supply has meant that South East Asian countries have focussed on generation first and then on distribution. This has led to slower progress in the power sector as a whole, as in India.

The extent of competition also varies across countries. To regulate monopolies (including transmission companies, distribution companies having served area monopolies and for upcoming generation projects/companies), an independent regulator has always been seen as a necessity. In cases where there has been a stable consistent, credible, and independent regulatory framework, privatization has been very successful e.g. Argentina and Peru.

Countries which have addressed employee concerns better, have had a greater level of success with distribution privatization e.g. Hungary and Argentina. Governments have addressed this challenge in many ways. Some of the mechanisms that have been employed are training programmes, severance benefits, service contracts for organizing outsourcing arrangements with former employees, ownership programmes including the provision of shares at deep discounts, and the placement of privatization proceeds into a fund providing support for displaced workers.

International experience could at the most, serve as a guideline. In totality it may not be fully relevant as the conditions in India could be significantly different from those in these countries.

Source: Distribution Policy Committee Report, Ministry of Power, Government of India, March 2002

The Kanungo Committee Report: Summary of findings and recommendations

Encouraged by the Government of India, assisted by the World Bank, and supported with grants from the Government of UK (DFID), Orissa took the initiative and became the first state to reform its electricity industry. The Orissa Electricity Reform Act, setting out the basic framework of the reform, enacted in 1995 came into force from 1 April 1996. The principal objectives of the reform were the following;

(a) Restructuring the electricity industry for rationalization of generation, transmission, distribution, and supply of electricity.

(b) Development of the industry in an efficient, economic, and competitive manner.

(c) To provide for avenues for participation in the industry of private entrepreneurs, attract private investment, and reduce the need for government funding of the electricity sector.

(d) To improve the quality of service to the consumer.

(e) To enhance operational efficiency and reduce losses.

(f) To provide a transparent mechanism for development and regulation of the industry, including tariff fixation and dispute settlement, through an independent, statutory body; the Orissa Electricity Regulatory Commission.

(g) To contribute to economic growth of the state by ensuring superior electricity supply.

(h) To create opportunities for increasingly rewarding employment for technical personnel and providing a stable environment for career development in the electricity sector.

Objectives at (a),(c) and (f) seem to have been achieved satisfactorily but the others have yet to be realised.

OERC has done pioneering work in our country in the establishment of a regulatory mechanism for the electricity industry. The Reform Act which has given the Commission a wide mandate, requires it to act effectively and independently. OERC's working in the last few years, however, has not been free from problems. To avoid these, we make the following recommendations.

1 To ensure that the Commission is fully functional at all times, the government must appoint commissioners promptly. Action for filling up vacancies should start early so that recommendations of the selection committee are available to the government at least two weeks before the vacancy occurs. In the event an appointment or selection is stayed by a court, prompt action should be taken to have it vacated by moving a higher court or a larger bench. Further, no one should be considered for appointment unless

there is a clear possibility of his serving for five years. To attract persons of ability, integrity, and standing, wide publicity should be given while inviting nominations for commissioners.

2. Budgetary allocations for the Commission should be adequate. Ordinarily, the government should not apply any budgetary cuts as long as the amount proposed by the Commission is within the limit of the licence fees received. Accounting regulation for the Commission should be settled forthwith and budgeted outlays placed in a banking account at the disposal of the Commission for incurring expenditure in accordance with the accounting regulation, without further reference to the government.

3. The Commission should institute regular systems of monitoring to ensure that the prescribed standards of performance are actually adhered to in the industry.

4 The government and the Commission should have purposeful inter-action on a wide range of issues of monitoring, problem solving, planning and development of the state's power sector. For exchange of information and discussion on administrative matters of mutual interest, the government should interact with the Commission's secretary. There should also be a system of meetings with the Commissioners, at least once a year, taken at an appropriately high level to discuss and settle matters involving important issues of policy.

5 The reforms were conceptualized under the guidance of the World Bank and the road map for implementation was set out in its Staff Appraisal Report (SAR). The assumptions in the SAR of growth in the demand for power in the state was highly ambitious, in terms of totals and composition. The demand for industrial power (EHT supply) which, subsidises domestic demand (LT supply), was grossly underrealized while domestic and commercial demand with high losses grew fast. T&D losses which were excessively high, and were targeted for substantial reduction, could not be brought down. Billing and collection efficiency under the privatised distribution companies were (DISTCOs) far from improving, actually worsened and theft of electricity continued unabated.

6 The reform scheme was further vitiated by sharp, upvaluation of assets at the time of transfer to the utilities. This led to a steep increase in the cost of power. Unrealistic assumptions that GRIDCO would become profit-earning from 1999/98 led to the abrupt withdrawal of the subsidy by the state government from 1996/97. There has been considerable increase in the average tariff at a cumulative rate of 15.5% annually over the last 9 years without any perceptible improvement in customer service. The cross subsidy has also been brought down, particularly in the post-reform period, thereby casting a heavier burden on domestic consumers.

7 Unabated increase in tariffs without a perceptible reduction in techno-commercial losses or improvement in customer service has led to growing public discontent against reform. This situation has worsened because of spiralling increase in costs and the deteriorating health of the utilities. The DISTCOs and GRIDCO have been rendered utterly unviable as a result of their inability to reduce T&D losses, control rampant misuse and theft of electricity and contain costs. DISTCOs are unable to pay salaries to their employees without defaulting on payment to GRIDCO towards purchase of

power. GRIDCO also is unable to recover costs and is incurring heavy debts to finance losses year after year. In this situation, the generating companies are also facing problems of inadequate cash realization. The situation has become so critical that the private sector partner in one of the DISTCOs, AES, has abandoned the management of CESCO which is now being managed by a CEO appointed by the Regulatory Authority. We recommend that the CEO attends to CESCO the whole time.

8 The key to the revival of the sector lies in improving efficiency and bringing down costs. By efficiency improvement not only can customer services be geared up but T&D losses, currently at an unacceptably high level, can be brought down substantially. The reform scheme sought to address the problem of T&D losses through (a) capital investment to strengthen the transmission and distribution system so as to reduce technical losses, and (b) privatization of distribution to bring in better management skills and practices for enforcement of accountability to reduce commercial loss. Neither of these has succeeded so far.

9 Large capital investments have been made but not a single project has been completed despite considerable time overruns. The delays in most cases for want of forest clearance, land availability or right of way. Since none of the projects has been commissioned, no benefit has been realized from the investments worth more than 600 crore rupees out of funds borrowed from the World Bank carrying heavy debt servicing liabilities. Efforts need to be intensified to complete and commission the on-going works. No new work should be contracted until the majority of the on-going works is completed. With the commissioning of these works, there should be a significant improvement in system reliability and reduction of technical losses which would benefit impact on cost reduction.

10 As far as the massive commercial losses are concerned, the results achieved over the last five years are insignificant. T&D losses which were 46.94% in 1995/96 as shown by the Audit are now 46.63% as reported by the utilities themselves. The loss is even more staggering in the LT segment at 68%. The DISTCOs, in their projections, have proposed very little loss reduction. The rate of loss reduction that needs to be attempted and achieved in the next five years must not be less than an average of 5% which, in our view, is well within reach. Attainment of the goal would, however, call for determined, comprehensive, and relentless effort. The following are some suggestions in this regard.

A concerted drive to remove illegal connections (such as hooking) and effective measures to convert them into regular connections followed up by systematic billing and collection of energy charges.
Should the DISTCOs wish police escort for carrying out special drives to prevent unauthorised use of electricity, over and above the comfort of the Chief Secretary's circular to DMs and SPs asking for prompt intervention in the event of violence by anti-social elements, the Government should make available to the companies the requisite support on payment of costs.
100% consumer metering within a year and immediate metering at the low voltage terminals of step down transformers should be provided so that supplies into HT & LT systems can be quantified for purpose of proper energy accounting which is practically missing.

13 A major cause of sharp increase in the cost of power was steep revaluation of assets at the time of transfer to GRIDCO. It called for substantially higher provision for depreciation as well as return on capital. Neither of these could be met because of a shortfall in revenue. In these circumstances it would be worthwhile keeping the revaluation in abeyance till the system is brought to balance. In fact there is a case for setting aside the revaluation of OHPC which is expected to be profitable in the years to come. In addition to this, the state government may agree to allow a moratorium on debt servicing to the state except the amounts in respect of loans from the World Bank which the state government. would need to pay to the Centre. After applying these correctives and also taking credit for T&D loss reduction at an average rate of 5% per year, the revenue gap at the existing retail tariff would show a decline but would still be substantial. The unavoidable revenue gaps would need to be financed from sources other than debt. Since the state government themselves are passing through severe financial stress, it may not be realistic to ask them to make a sacrifice over and above what has been suggested already.

12 An exercise has been carried out to estimate the annual shortfall on a cash-flow basis without a efficiency tariff hike but assuming that of the DISTCOs collection would progressively improve from the present level of 76% to reach 95% by the year 2005/06 instead of ending up with a collection efficiency of 84% proposed by them. With a tariff hike of 18% in 2005 the entire cash deficit would disappear and the year 2005/06 would witness both an operational profit as well as a marginal cash surplus. The sector as a whole would turn around in 2005/06. The consumers could be called upon to pay higher tariffs at that stage because by then the utilities are expected to have shown evidence of their concern for and efficiency in T&D loss reduction and improvement of customer service; not otherwise.

13 To bring the reforms back on the rails, the World Bank and the DFID who helped Orissa initially, and hopefully have retained their interest in the reform, should come forward with a suitable package to fill the revenue gap in the intervening years. Without this interim financing (estimated at 3240 crore rupees) there seems hardly any prospect of the reform coming to fruition. The government of India should not only persuade them to do so but also extend a helping hand in sharing the responsibility of interim financing of the revenue gap.

14 Once a decision is taken on interim financing and its apportionment, the Distcos and GRIDCO may be pinned down to specific performance parameters by desegregating the proposed T&D loss reduction DISTCO-wise.

15 In the prevailing run-down state of GRIDCO and DISTCOS, no durable rehabilitation is possible without interim financing of unavoidable losses. However, it needs to be emphasized that no amount of support from outside would succeed unless the utilities conduct themselves with greater sense of responsibility. Privatization was seen as a means to improve the performance of the DISTCOs. The private sector partners need to bear in mind their crucial role which can not be performed satisfactorily unless they face the tasks as a challenge and an opportunity and take the industry forward in the true spirit of partnership for mutual benefit.

16 The private promoters of the DISTCOs neither brought superior management skills nor did they arrange financial support even by way of working capital for the companies which were in dire need of capital, working capital in particular. Instead of using the good offices of BSES to secure working capital in terms of Clause 8.1 of the Shareholders Agreement for the three DISTCOs under their management, the DISTCOs have persistently defaulted in payment to GRIDCO towards purchase of power. The outstanding overdues of GRIDCO as on 30 September 2001 against these three DISTCOs is 680.72 crore rupees including bonds issued by them in lieu of cash payments. So far as the other distribution company CESCO is concerned, the situation is worse. AES, the private sector partner never fulfilled its commitment to bring working capital. They were allowed to pile up unpaid power purchase bills amounting to 403 crore rupees by time they walked away in August 2001. Now that AES have abandoned CESCO, GRIDCO seems to be left with hardly any other option except exploring a legal remedy. As far as BSES-managed DISTCOs are concerned, the attitude of deliberate default in payment to GRIDCO must end. BSES should make all efforts to bring in working capital in terms of the Shareholders Agreement.

17 The system of escrow put in place to secure regular payments to GRIDCO towards power purchase has not worked. With the package of financial relief recommended by us along with enforcement of the provisions of the Shareholders Agreement, the escrow mechanism should be made to work and strictly enforced.

18 There is an urgent need to develop trust and goodwill between the employees and the management. The vital role of the employees and their associations in building up the industry needs to be taken more seriously. While firm action against known miscreants is necessary to enforce discipline and accountability this can not be done without skillful handling of situations and willingness to mitigate genuine grievances. A specific matter in this connection relates to pensionary benefits. Employees apparently have found that the pension scheme preferred by them, and also adopted by the companies, has turned out to be disadvantageous, particularly for those who came over from the government in a higher age group. In a matter like this neither the present employers nor the government should take any rigid stand. The effort should be to find a solution which may not even be difficult to reach. Likewise, there is an apprehension that the liabilities of Government/GRIDCO towards the Pension Trust may not have been assessed correctly. This is a matter of actuarial calculation, which may affect the viability of the Pension Funds, so there should be no reluctance to take a fresh look at the estimates.

19 Orissa is richly endowed with natural resources, and now has the additional advantage of surplus power. This combination needs to be exploited to accelerate industrialization of the state through vigorous marketing of power by offering more competitive rates. By selling surplus power to industries, even at tariffs lower than prescribed by the OERC, not only would the state benefit from industrialization, but the DISTCOs themselves would also stand to gain as long as they recovered costs at the margin. The tariffs fixed by OERC should be treated as the ceiling in each category, and utilities should have the freedom to supply power at lower rates in exercise of their commercial judgement.

20 With restructuring and privatization, there is a much greater need now for rigorous enforcement of safety norms in the electricity industry. However, care needs to be taken to see that there is no mindless expansion of the Electrical Inspectorate. Services of chartered engineers, under a strict system of empanelment and penalty in the event of misconduct, may be utilized for the purpose of supplementing human resources of a slim, well-structured Inspectorate.

21 The services of local consultants as well as highly-rated consulting firms of international repute were used extensively in the preparation of the blueprint of reform, and to assist the utilities in developing internal systems of operation management, financial control, technical services, contract management, project implementation etc. The cost incurred so far is a staggering 306 crore rupees. However, judging by the fate of the reforms and the state of the utilities it is clear that the utilities, for whose benefit the consultants were engaged, did not assimilate much of their advice. Instead of developing an inner strength with the assistance of consultants, the tended to be excessively dependent on them leading to a near-atrophy of organizational strength. We suggest that this practice which weakens organizations rather than strengthening them and demotivates employees instead of improving their skill and confidence, should end as soon as possible.

22 Close attention should be given to strengthening the managerial competence of GRIDCO which is not only financially sick but also organizationally very weak. The following recommendations are made in this connection.

- The senior management of GRIDCO should be selected on the basis of merit and appointed for a fixed term of 3/5 years.
- The State Load Dispatch Center (SLDC) and its commercial counterpart the energy-billing centre should be provided with the necessary staff whose skills should be substantially honed and upgraded by regular training.
- GRIDCO's Project Management Unit (PMU) should take over the responsibility of all capital works irrespective of the source of funding. It should also monitor capital works executed by the distribution companies in addition to managing and monitoring GRIDCO's own works.

23 The entire power sector needs top management of a high calibre just as it requires an efficient workforce motivated to further the interest of the industry. The task before the management is daunting. Appointments to the Boards of Directors of all the utilities need to be reviewed to ensure that professionals including administrators with competence, vision, and commitment may enrich the utilities at the top. The prevailing system of part time appointments to key positions in the sector, including the Chief Executive Officer of OHPC should end. The Chief Executive Officers of the DISTCOs should be stationed at their respective headquarters.

24 The Committee did not get evidence of any innovative practice introduced in the management of the privatized DISTCOs. However, in some of the DISTCO areas, an experiment is in progress to involve village communities in streamlining power supply in rural areas. While the results seem to be encouraging, the exercise currently being conducted by consultants can succeed in the long run and over large areas only if the programme is implemented by DISTCO officials themselves.

25 It is recognized that Regulatory Commissions need to lay down norms for tariff determination which would enable the utilities to have a clear idea of the range in which tariffs may move over a reasonable period. A multi-year tariff regime is therefore being advocated by experts. The OERC has also laid down norms in certain areas though much more needs to be done. But no purposeful result can be achieved in the matter of multi-year tariffs unless there is a reasonable financial balance. Serious efforts are required to provide financial balance to the sector before multi-year tariffs can become a reality.

26 Another idea often advocated by experts is multi-buyer model of power trading. Here again, attainment of financial balance is an essential pre-requisite to provide a basis for competition through various models of multi-buyer systems as distinct from the single-buyer model adopted by Orissa as well as other states which have embarked on reforms. In the prevailing situation of GRIDCO's near-bankruptcy and disarray in the functioning of DISTCOs, the sector should be spared any further trauma. Meanwhile, GRIDCO needs to strengthen itself to develop the ability and skill to handle the power trading function, which calls for, among other things, prompt exercise of commercial judgement. Urgent attention should be paid to develop this within the organization. It would be of advantage to develop within GRIDCO a well-functioning trading unit which may eventually be turned into an independent trading organization as a step towards bringing in a competitive regime that would provide the consumer the opportunity to choose the source of his power supply.

27 Rural electrification seems to have unintentionally, become the worst casualty of the reform process. With the restructuring of OSEB, and privatization of DISTCOs, the rural electrification wing of OSEB was disbanded and it was left to the DISTCOs to carry on with schemes that were in the pipeline. Since the activity is not attractive commercially, the DISTCOs cannot be expected to be very enthusiastic about rural electrification. The interest of DISTCOs has further slackened because even the modest rural electrification work done by them has not been paid for inspite of the fact that an amount of 23 crore rupees of capital subsidy due was certified by the OERC several months ago. No fresh scheme of rural electrification seems to have been proposed for funding support of agencies like REC, nor any scheme drawn up for the purpose. Another regrettable feature is the utter lack of concern for the productive use of electricity in rural development through agriculture pumping. In terms of agricultural demand for power among states, Orissa is practically at the bottom. What is worse is that agricultural demand for power in the state has gone down from a meagre 6% in 1992/93 to a dismal 3% in 1999/00, compared with the national average of 30%. No single department of the state government is entrusted with the administrative responsibility to plan, promote, and monitor growth and press for rural electrification for the development of irrigation pumping which is vital for rural development. Under a high priority national plan, all villages are required to be electrified by March 2007. For a state like Orissa, with 40% of the population from weaker sections of scheduled castes and scheduled tribes living in remote areas, the headway to be made is large. The Kutir-Jyoti programme needs to be persued with vigour. It must however be ensured that the benefits of the subsidized electricity supply under this programme flow to the targeted beneficiaries. The goal is unlikely to be reached unless determined efforts are made and effective machinery is put in place for planning, execution, and monitoring rural electrification projects. The vacuum caused by abolition of the

rural electrification wing of the OSEB needs to be filled up and an alternative system created. The following recommendations are made in this connection.

- A Rural Electrification Planning Organization (REPO) should be set up under the government to provide focus and direction to this vital programme, to prepare specific schemes, pose them to funding agencies and over-see utilization of the funds procured.
- REPO should have under it four Rural Electrification Planning Units (REPU), each corresponding to a DISTCO with which it would need to work in close coordination. These units would draw up, detailed schemes of rural electrification.
- Prioritization of villages for electrification should be done by REPUs in consultation with the Collector of the concerned district.
- Execution of the works would be the responsibility of the concerned DISTCOs.
- REPUs would need to monitor the execution and report completion of schemes and the expenditure incurred thereon to the Collector of the district and the state REPO.
- On the basis of the Collectors' certificates of satisfactory completion, the state government should promptly settle subsidy payments admissible to DISTCOs.
- Government would need to provide DISTCOs with a capital subsidy; revenue requirements would, in normal course, be considered by OERC as a part of the tariff exercise.

28 Our recommendations would help rehabilitate the utilities, bring stability, and promote growth of the power sector only if they are implemented as a package and their implementation is managed and monitored closely. The reforms adopted by Orissa may have been flawed, but mid-course corrections could have been successfully applied much earlier, and at less cost to the economy, had the reforms been managed approximately. The Committee's recommendations for putting the reform back on the rails would succeed only if the need for reform management is recognized and a system is put in place by the government. for regular monitoring, coordination and mid-course correction. It is interesting to know that of all the major parameters of reform laid down in the SAR, one of the few that proved realistic was tariffs. Retail tariffs have been fairly close to the SAR assumption in the first two years and substantially higher since 1998/99. Thus, consumers have not failed to provide support; they have made ample sacrifices for a of better quality of service, which has eluded them so far.

29 Power sector reforms would succeed if the utilities bring in efficiency, cut costs, reduce losses, and ensure greater consumer satisfaction. It would also require strong enforcement to ensure that consumers of electricity pay for its use. All sections of society, particularly those, in a position to influence public opinion, have the responsibility to provide the requisite support. Revival of the power sector would depend to a large extent on how fast a consensus is built in this vital area.

30 The state's power sector is now on the brink of a crisis. It is high time all agencies: the state government, the central government, the World Bank and the DFID, got together and took a holistic view of what can be done by each to rescue the reforms. If electricity reform fails in Orissa, it would have an adverse impact on reforms all over the country. What has taken place in the electricity industry of Orissa is only restructuring, privatization and

establishment of a Regulatory Commission. The real reform, which brings in its wake benefits to consumers, strength to the industry, and growth for the economy has yet to come.

Chronology of events in Orissa power sector reforms

November 1993	Chief Minister of Orissa confirms the State Government's commitment to power sector reforms
April 1995	GRIDCO and OHPC incorporated under Companies Act, 1956
January 1996	Orissa Electricity Reforms Act, 1995 is notified in Official Gazette
April 1996	Reform Act comes into force GRIDCO takes over T&D business from OSEB OHPC takes hydro projects from OSEB & DoE
August 1996	OERC becomes operational
October 1996	Management contract awarded to BSES in respect of central zone
April 1997	OERC issues licences to GRIDCO Management contract to BSES terminated
November 1997	Chief Minster of Orissa announces the privatization of 4 DISTCOs GRIDCO incorporated four wholly-owned subsidiary companies
November 1998	The four distribution subsidiary companies become operational
Jan – April 1999	OERC issues separate transmission (to GRIDCO) and distribution (to 4 DISTCOs) licences
April 1999	BSES takes over WESCO, NESCO and SOUTHCO
September 1999	AES consortium takes over CESCO
August 2001	Following AES pullout, OERC vests management of CESCO in a chief executive officer

References

[1] Government of Orissa website http://www.orissagov.com

[2] "An analytical overview of India's energy". CMIE (Centre for Monitoring Indian Economy). April 2002.

[3] Annual Report on the Working of State Electricity Boards and Electricity Departments. Planning Commission. 2001. pp. 78.

[4] Annual Report on the Working of State Electricity Boards and Electricity Departments. Planning Commission. 1997. pp 51.

[5] Staff Appraisal Report on Orissa Power Sector Restructuring Project. The World Bank. April 19th, 1996 and OSEB Annual Reports.

[6] Annual Report on the Working of State Electricity Boards and Electricity Departments. Planning Commission. 1999.

[7] All India Statistics 1997-98, General Review, CEA (Central Electricity Authority). 2000.

[8] "Infrastructure for Development". World Development Report 1994. The World Bank

[9] ADB-NCAER project on "Economic and Policy Reforms in India", Presented at IIC, New Delhi. December 9-10th 1999

[10] Distribution Policy Committee Report, Ministry of Power, GoI, March 2002

[11] Report of the Committee on Private Sector Participation in Power Distribution, MoP, GoI, March 1998

[12] Minutes of the GRIDCO Board meeting held on May 9th 1997

[13] Review of electricity legislation and regulation in Gujarat, Vol-I, TERI, 1999

[14] Distribution Operations Agreement between GRIDCO and BSES, 13th September 1996

[15] Sinha S, "Orissa power sector reforms: getting back on track". India Infrastructure Report 2002. p 260-271

[16] An Overview of GRIDCO (1996–2002), GRIDCO, 2002

[17] Report of the committee of independent experts to review the power sector reforms in Orissa (The Kanungo Committee Report), 2001

[18] "Intervention by BSES in the rural sector", presentation by Prof. D N Rao in Conference on Distribution Reforms, October 2001.

[19] Minutes of the GRIDCO Board meeting held on July 27th 1999

[20] Compendium of Orders on Bulk and Retail Supply Tariff and revenue requirements for 2001-02 & 2002-03. OERC. 2002

[21] Report of the expert group on "Settlement of SEB dues", MoP, GoI, May 2001.

Bibliography

1. Power Sector Development Policy of the Government of Orissa, GoO, April 4th 1996
2. World Bank's new lending policy of 1993
3. Orissa Electricity Reform Act 1995 http://www.orierc.org/acf.htm
4. "Policy to encourage private investment in the Indian power sector-a perspective" by N. Ramji, Joint Secretary, Investment Promotion Cell, Ministry of Power, GoI
5. "Legal and policy framework of private power development" by Ministry of Power, GoI
6. Interview former Orissa power sector official, June 14th 2002
7. "Power Sector Reform in Developing Countries: Mismatched Agenda" by Njeri Wamukonya, UNEP Collaborating Centre on Energy and Environment, Risoe National Laboratory, Denmark
8. Thillai,R A, 2000 "Power sector reform in Orissa: an ex-post analysis of the casual factors", Energy Policy 28 (2000) pp. 657-669
9. Wadhawan S. "Orissa reforms continue: disinvestment proceeds apace", Powerline, August 1998, 2(11): 16
10. Dhar P. "Orissa: Disinvestment gets underway", Powerline, May 1998, 2(8): 18
11. "BSES Contract in Limbo: a setback to privatization of distribution", Powerline, June 1997, 1(9): 16
12. Orissa-A new era beckons, Powerline March 1999, 3(6): 13-17
13. Joel Ruet. "Winners and losers of the SEB reforms: an organisational analysis". Publication no. 1, 2001, French Research Institute in India.

Abbreviation and acronyms

BSES	Bombay Suburban Electricity Supply Limited
CEA	Central Electricity Authority
CEO	Chief Executive Officer
CESCO	Central Electricity Supply Company
DFID	Department for International Development
DISTCOs	Distribution Companies
DOA	Distribution Operation Agreement
DoE	Department of Energy
DSM	Demand Side Management
DVB	Delhi Vidyut Board
E(S) Act 1948	Electricity (Supply) Act 1948
EREB	Eastern Region Electricity Board
GoI	Government of India
GoO	Government of Orissa
GRIDCO	Grid Corporation of Orissa
HRD	Human Resource Development
ICB	International Competitive Bidding
IM	Information Memorandum
NESCO	North-eastern Electricity Supply Company
ODA	Overseas Development Administration
OER Act 1995	Orissa Electricity Reform Act 1995
OERC	Orissa Electricity Regulatory Commission
OHPC	Orissa Hydro Power Corporation
OPGC	Orissa Power Generation Corporation
OSEB	Orissa State Electricity Board
PFC	Power Finance Corporation
PMGY	Prime Minister Gramina Yojna
PPAs	Power Purchase Agreements
R&M	Renovation & Moderation
REPO	Rural Electrification Planning Organization
REPU	Rural Electrification Planning Unit
RFP	Request for Proposal
RFQ	Request for Qualification
SAR	Staff Appraisal Report
SBM	Single Buyer Model
SDP	State Domestic Product
SOUTHCO	Southern Electricity Supply Company
VEC	Village Electrification Committee
VRS	Voluntary Retirement Scheme
WB	The World Bank
WESCO	Western Electricity Supply Company